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ABSTRACT

This guide is for an articulated two-year high school, two-year college curriculum for garden center management developed by two postsecondary and five secondary institutions and representatives of the private sector in Texas. The guide includes the following: (1) a brief description of the occupation of garden center manager; (2) the basic objective of the curriculum; (3) extensive duty and task lists for garden center management (including performance objective, standard, materials, enabling objectives, and performance guide for each task); (4) a flowchart showing the recommended secondary and postsecondary course options; (5) recommended student prerequisites including academic courses; (6) basic course outlines for grades 9-14; (7) a list of secondary reference materials keyed to courses; (8) a line drawing of recommended secondary facilities; (9) a list of recommended tools/equipment and estimated costs; (10) a competency profile; (11) an example of the student monitoring and follow-up system; (12) career ladder information; (13) recommended teacher approval criteria; and (14) a sample articulation agreement. (KC)

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An Articulated Curriculum

in Agricultural Technology:

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Garden Center Management

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"2 + 2" Articulated Agricultural Occupations Project

FIRST YEAR FINAL REPORT

June 1990

FIRST YEAR REPORT

"2+2" Articulated Agricultural Occupations Project
Garden Center Management

Sponsored by:

Texas Education Agency
Division of Vocational Education

and

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Conducted by:

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I. FIRST YEAR RESULTS AND BENEFITS

Even with the late start of the project the following activities and products have been produced:

1. A commitment of the two postsecondary and five secondary institutions and representatives of the private sector has been made to develop and implement a ``2+2 articulated curriculum'' for the agricultural occupations of poultry products management, dairy products management, retail florist management, and garden center management.
2. A 2+2 articulated curriculum for the occupation of garden center management has been developed. The 2+2 articulated curriculum for the garden center manager includes:
    a. A brief description of the occupation of garden center manager.
    b. The basic objective of the curriculum
    c. A flow chart showing the recommended secondary and postsecondary course options
    d. Recommended student prerequisites including academic courses
    e. Basic course outlines for grades 9-14
    f. A list of secondary reference materials
    g. A line drawing of recommended secondary facilities
    h. A list of recommended tools/equipment and estimated costs
    i. A competency profile
    j. An example of the student monitoring and follow-up system
    k. Recommended teacher approval criteria
    l. A sample articulation agreement

The 2+2 articulated curriculum for the garden center manager is presented on the following pages.

It is anticipated that other school districts and two year postsecondary institutions will be able to use the curriculum as a model for linking instructional activities of secondary and postsecondary education for the preparation of technical workers in the agricultural industry.

II. JOB DESCRIPTION: GARDEN CENTER MANAGER

The garden center manager directs garden center operations either independently or in conjunction with other managers pursuant to the objectives and policies of the employing company or individual.

Utilizes the management process to manage labor in a variety of horticultural settings. Collects data about employees, identifies specific training needs/problems, implements a plan of action, and evaluates outcomes of the initiated plan. Assists with sales and procedures according to company policy and customer preferences.

Ensures quality of horticultural products by serving as a positive role model for employees supervised. Accepts responsibility in managing, supervising, and teaching employees the importance of product quality to the customer and to the success of the company.

Supervises the care of horticultural plants and products and arranging plants and materials for display purposes.

Provides recommendations to the customers on the care and maintenance of horticultural plants.

Provides recommendations and instructions to the customers on the proper and safe use of agricultural chemicals, fertilizers, and other plant care products.

III. CURRICULUM OBJECTIVE

The curriculum is designed to produce an individual with skills, knowledge, and abilities sufficient to begin work as a garden center manager in either the production or retail sales area of the horticulture industry. The individual should perform safely and effectively in the position assigned to him by his employer. Graduates will be able to work independently or in a supervisory capacity.

IV. DUTY AND TASK LISTING FOR GARDEN CENTER MANAGEMENT

The following is a chart showing the duty and task list for garden center management. This list was compiled by a panel of horticultural/garden center employees. The panel consisted of employees/managers in the horticultural/garden center industry.

GARDEN CENTER MANAGEMENT

DUTIES	TASKS									
A. PERFORMING SALES DUTIES	1. Present sales information to customer	2. Inform customer of warranty & guarantee specifications	3. Identify common lawn and garden insects	4. Complete sales slip	5. Compute sales tax	6. Prepare sales invoice	7. Identify plant diseases	8. Suggest procedures for weed, insect , and disease control	9. Suggest care of plants for customers	10. Determine customer needs
A. PERFORMING SALES DUTIES	11. Provide customers with technical assistance	12. Recommend plant maintenance procedures	13. Process telephone orders							
B. PREPARE SOIL AND GROWING MEDIA	1. Shred planting media	2. Screen planting media	3. Mix media materials	4. Pasteurize prepared media with steam	5. Pasteurize growing media with chemicals	6. Mix fertilizers into media	7. Prepare seedbed	8. Level or smooth planting area	9. Mark off location of beds	10. Shape or form beds
B. PREPARE SOIL AND GROWING MEDIA	11. Mark off planting spaces with bedwire									
C. PROPAGATING PLANTS, SEEDS, AND CUTTINGS	1. Plan planting schedules	2. Clean seed	3. Plant seeds in flats or growing benches	4. Plant seed using a precision small seed type planter	5. Plant bulbs	6. Transplant seedlings	7. Treat bulbs to control fungi	8. Prepare plants and cuttings for propagation	9. Take cuttings	10. Stick cuttings
C. PROPAGATING PLANTS, SEEDS, AND CUTTINGS	11. Label plants	12. Transplant trees and shrubs	13. Provide winter-ization of plants	14. Select seed varieties	15. Transplant cuttings	16. Apply rooting hormone				
D. CONTROLLING THE PLANT ENVIRON-MENT	1. Control light requirements by using shade cloth	2. Control temperature by setting thermostat	3. Cultivate plants	4. Water plants and nursery stock	5. Apply mulches					
E. APPLYING FERTIL-IZER AND CHEMICALS	1. Calculate fertilizer requirements	2. Calculate pesticide concentrations	3. Calculate fertilizer concentration	4. Calibrate fertilizer application equipment	5. Collect soil samples	6. Test soil sample	7. Mix chemicals	8. Apply chemicals	9. Apply dry fertilizer	10. Apply liquid fertilizer

GARDEN CENTER MANAGEMENT

DUTIES	TASKS									
E. APPLYING FERTILIZER AND CHEMICALS	11. Apply dry chemicals to control weeds	12. Apply liquid chemicals to control weeds	13. Apply fertilizer with centrifugal/ cyclone spreader	14. Dispose of chemicals and container properly	15. Properly fog buildings and other areas					
F. HARVESTING PLANTS, SEEDS, AND CUTTINGS	1. Grade plants	2. Count and bunch flowers	3. Remove saleable plants from beds or benches	4. Remove bedwire or fibered plastic from harvested areas	5. Label harvested plants by common name					
G. STORE, SHIP, AND TAKE INVENTORY	1. Bundle plants	2. Wrap plants	3. Pack plants	4. Bunch plants	5. Pack shrubs	6. Check received merchandise against invoice listing	7. Keep current inventory of products for sale	8. Package orders for shipment	9. Prepare invoices and shipping labels	10. Place plant materials in storage
G. STORE, SHIP, AND TAKE INVENTORY	11. Assemble shipping cartons	12. Store received supplies	13. Inventory plants	14. Load trucks and trailers for drop shipment	15. Conduct inventory at the end of the physical period	16. Store received plant material	17. Store stock and supplies	18. Receive and unpack cut flowers, floral products, and merchandise		19. Keep an inventory of plants, equipment, and supplies
H. MANAGING THE BUSINESS	1. Maintain business records	2. Prepare financial statements	3. Interpret financial statements	4. Complete the business loan application process	5. Develop credit plan	6. Prepare budget	7. Prepare tax statements	8. Prepare depreciation schedule	9. Calculate net worth	10. Orient new employees
H. MANAGING THE BUSINESS	11. Plan work schedules	12. Determine labor needs	13. Train workers using demonstration-performance method	14. Evaluate employee performance	15. Prepare reports	16. Develop marketing plan	17. Maintain inventory records	18. Select computer software for records and reports	19. Conduct periodic inspection of merchandise	20. Conduct inventory of merchandise
I. APPLYING SAFETY PRACTICES	1. Apply basic emergency first aid techniques	2. Use fire extinguisher	3. Administer cardio-pulmonary resuscitation (CPR)							
J. PERFORMING SALES-RELATED DUTIES	1. Design and letter show cards	2. Package customer purchase	3. Process cash sales transactions	4. Process charge card sales transaction	5. Gift wrap purchases	6. Label and price products	7. Update prices on merchandise	8. Maintain customer file system and accounts	9. Prepare advertisements	

GARDEN CENTER MANAGEMENT

DUTIES	TASKS									
K. SERVICING AND MAINTAINING EQUIPMENT AND FACILITIES	1. Servicing business vehicle	2. Service small four cycle and two cycle engines	3. Sharpen hand tools	4. Service sprinkler systems by replacing valves and gaskets	5. Replace greenhouse fan	6. Clean sprayers	7. Install sprinkler heads, nozzles, and other irrigation equipment		8. Clean work area	9. Service electrical outlets and extensions
K. SERVICING AND MAINTAINING EQUIPMENT AND FACILITIES	10. Lubricate moving parts of equipment	11. Lubricate chassis of garden equipment	12. Service or replace ventilation system	13. Trouble-shoot electrical wiring and equipment	14. Calibrate equipment	15. Establish and maintain service records	16. Order repair parts for equipment	17. Perform routine maintenance and repairs	18. Prepare equipment for off-season storage	19. Clean and fumigate storage facility
L. PERFORMING GENERAL OFFICE WORK	1. Process telephone calls	2. File materials	3. Process mail	4. Maintain mailing list	5. Schedule appointments and meetings	6. Order supplies and equipment	7. Process incoming orders	8. Process outgoing deliveries	9. Process wire orders	10. Clean work area
L. PERFORMING GENERAL OFFICE WORK	11. Repair minor malfunctions of office equipment									
M. DESIGNING LANDSCAPES	1. Follow a landscape plan installing plants	2. Set Stones	3. Install ground covers	4. Transplant trees and shrubs	5. Price landscape design	6. Seed lawns or sod				

DUTY: A. PERFORM SALES DUTIES

TASK: 1. Present Sales Information to Customer

****

Performance Objective: Given materials listed below, present sales information to customers.

Standard: Plant material and/or product cost, functions, application, growth habits, care requirements and/or comparisons must be included in sales information given to interested customer. All customer questions must be answered.

Materials Needed: Customer, Products, Plant Materials, Product Information, Plant Material Information.

Enabling Objectives: Knowledge of plant identification.
Knowledge of chemical treatments for insect, weed, and disease protection.
Knowledge of plant maintenance and requirements.

Performance Guide:

1. Greet the customer
2. Offer to help the customer
3. Determine the products or plant materials to which the customer is showing interest
4. Explain pertinent information:
    a. Horticultural products:
        (1) Cost of product
        (2) Functions of product
        (3) Applications of product
        (4) Comparison of similar products
    b. Plant materials:
        (1) Cost of plant materials
        (2) Plant materials' growth habits
        (3) Plant materials' care requirements
        (4) Comparison of similar plant materials
5. Answer the customers' final choice of products and/or plant materials
6. Determine the customer's questions
7. Ask if customer would like to purchase the selected products and/or plant materials

DUTY: A. PERFORM SALES DUTIES

TASK: 2. Inform Customers of Warranty and Guarantee Specifications

****

Performance Objective: Given materials listed below, interpret warranties and guaranties for customers.

Standard: Conditions of warranty or guarantee of a product must be make clear to the customer.

Materials Needed: Store, Warranty or Guaranty, a Customer, and a Sales Person.

Enabling Objectives: Be able to understand and explain warranties and guaranties.
Knowledge of public relation skills.

Performance Guide:

1. Ask the customer if he is interested in knowing what warranties or guarantees are covered by the purchase of a product
2. Explain the conditions of the warranty or guaranty of the products purchased
3. Advise the customer of time limitations concerning mail in guarantees or warranties
4. Advise the customer of certain defects the warranty or guaranty will not cover

DUTY: A. PERFORM SALES DUTIES

TASK: 3. Identify Common Lawn and Garden Insects

****

Performance Objective: Given materials listed below, identify common lawn and garden insects.

Standard: Insects will be identified correctly.

Materials Needed: Damaged Plant, Insect Reference, Hand Lens.

Enabling Objectives: Knowledge of insect identification.

Performance Guide:

1. Secure damaged plant
2. Observe plant with hand lens
3. Determine type of damage or symptoms
4. Refer to insect reference guides
5. Determine type of insect causing damage

DUTY: A. PERFORM SALES DUTIES

TASK: 4. Complete Sales Slip

****

Performance Objective: Given materials listed below, complete sales slip.

Standard: Sales slips should be filled out completely and accurately.

Materials Needed: Sales Slip, Calculator (optional), Pen/Pencil.

Enabling Objectives:
Be able to write clearly.
Be able to add monetary amounts.
Be able to calculate sales tax.
Be able to read price list.
Be able to identify merchandise.

Performance Guide:

1. Given a sales slip, fill out date, name, salesperson etc.
2. Fill in quantities, items, price each and extensions for items be bought
3. Add totals together to compute subtotal
4. Calculate sales tax on sub-total
5. Add these together to compute total cost for all items sold

DUTY: A. PERFORM SALES DUTIES

TASK: 5. Compute Sales Tax

****

Performance Objective: Given materials listed below, compute sales tax.

Standard: Compute sales tax with and without tax table.

Materials Needed: Calculator, Sales Tax Table, Pen/Pencil.

Enabling Objectives: Must be able to figure percentages.
Be able to add.
Knowledge of taxable/non-taxable items.

Performance Guide:

1. Using sales tax table, find the amount of tax required for the dollar amount of merchandise
2. Add this to the amount of merchandise
3. Using calculator - multiply tax rate % by the amount total of merchandise
4. Add this to the amount of merchandise

DUTY: A. PERFORM SALES DUTIES

TASK: 6. Prepare Sales Invoice

****

Performance Objective: Given materials listed below, prepare sales invoice.

Standard: Sales invoice must include customer information, salesperson's signature, type of sale, method of shipping, purchase information and cost.

Materials Needed: Order, Price List, Sales Invoice.

Enabling Objectives: Be able to write clearly or type correctly.
Be able to add and subtract.

Performance Guide:

1. Obtain a sales invoice
2. Complete a sales invoice:
    a. Include information concerning the customer:
        (1) Name and address
        (2) Phone number
        (3) Delivery instructions, if required
    b. Include information concerning the purchase:
        (1) Date
        (2) Quantity of items purchased
        (3) Name and description of items purchased
        (4) Inventory/catalog number of items purchased
        (5) Price of item purchased
        (6) Delivery date
    c. Indicate type of sale:
        (1) Cash sale
        (2) Lay-away
        (3) Company charge
        (4) Credit-card
        (5) C.O.D.
    d. Indicate method of shipping:
        (1) Parcel post
        (2) Special delivery
        (3) Growers truck

****

e. Total the sales invoice:
   (1) Figure line items totals by multiplying cost of item by the quantity
   (2) Add all line items and record on sales invoice
   (3) Determine amount of sales tax on taxable items and record on sales ticket

DUTY: A. PERFORM SALES DUTIES

TASK: 7. Identify Plant Diseases

****

Performance Objective: Given materials listed below, identify plant diseases.

Standard: Disease will be identified correctly.

Materials Needed: Plant Infected With a Disease, Reference on Diseases of Plants, Hand Lens.

Enabling Objectives: Know of plant identification.
Knowledge of disease symptoms.

Performance Guide:

1. Identify infected plant
2. Determine symptoms
3. Refer to reference on diseases

DUTY: A. PERFORM SALES DUTIES

TASK: 8. Suggest Procedures for Weed, Insect and Disease Control

****

Performance Objective: Given materials listed below, suggest procedures for weed, insect and disease control.

Standard: Give correct recommendation to customer 100% of the time.

Materials Needed: Customer With a Need for Information, Insect, Weed and Disease Control Reference.

Enabling Objectives:
Knowledge of plant identification.
Knowledge of insect identification.
Knowledge of disease and symptom.
Knowledge of public relation skills/communication skills.

Performance Guide:

1. Secure desired information needed by customer
2. Determine type or kind of plants to be grown
3. Determine location, soil type, available light, exposure to climate
4. Make recommendation to customer

DUTY: A. PERFORM SALES DUTIES

TASK: 9. Suggest Care of Plants for Customers

****

Performance Objective: Given materials listed below, suggest care of plants for customers.

Standard: Explain to the customer the care of the plants.

Materials Needed: Plants, Customer.

Enabling Objectives: Identify plants and their requirements.
Be able to speak clearly, effectively.

Performance Guide:

1. Identify the plant
2. Explain light exposure
3. Describe watering
4. Explain fertilization
5. Explain pruning procedures
6. Explain pest control and disease control
7. Explain seasonal care
8. Explain proper temperature and ventilation
9. Explain repotting
10. Answer additional customer questions

DUTY: A. PERFORM SALES DUTIES

TASK: 10. Determine Customer Needs

****

Performance Objective: Given materials listed below, determine customer needs.

Standard: Help customer select flowers or plants.

Materials Needed: Flowers, Houseplants, Customer.

Enabling Objectives: Be able to talk clearly and knowledgeably.
Have neat personal appearance.
Knowledge of flowers and plants.

Performance Guide:

1. Determine quality and quantity of light in proposed setting
2. Determine humidity
3. Determine amount of time customer can spend on plant care
4. Determine if customer prefers a flowering or foliage plant
5. Determine if customer prefers a standing or hanging plant
6. Determine size and shape of plant desired by customer
7. Select plant
8. Suggest accessories for use with the plant (pots, baskets, lights, fertilizer, etc.)
9. Determine if pick-up or delivery
10. Close the sale

DUTY: A. PERFORM SALES DUTIES

TASK: 11. Provide Customers With Technical Assistance

****

Performance Objective: Given materials listed below, provide customers with technical assistance.

Standard: Plant material and/or product cost, functions, application, growth habits, care requirements and/or comparisons must be included in sales information given to interested customer. All customer questions must be answered.

Materials Needed: Customer, Products, Product Information, Plant Material Information, Plant Materials.

Enabling Objectives: Must be familiar with customer etiquette. Must be able to identify plants and plant products.

Performance Guide:

1. Greet the customer
2. Offer to help the customer
3. Determine the products or plant materials to which the customer is showing interest
4. Explain pertinent information:
    a. Horticultural Products:
        (1) Cost of product
        (2) Functions of product
        (3) Applications of product
        (4) Comparison of similar products
    b. Plant materials:
        (1) Cost of plant materials
        (2) Plant materials' growth habits
        (3) Plant materials' care requirements
        (4) Comparison of similar plant materials
5. Answer the customers' final choice of products and/or plant materials
6. Determine the customer's questions
7. Ask if customer would like to purchase the selected products and/or plant materials

DUTY: A. PERFORM SALES DUTIES

TASK: 12. Recommend Plant Maintenance Procedures

****

Performance Objective: Given materials listed below, recommend plant maintenance procedures.

Standard: Verbal information will be supplied to the customer on the care of house plants.

Materials Needed: Customer, House Plants.

Enabling Objectives: Must be able to identify plants.

Performance Guide:

1. Identify the plant
2. Explain to customer what amount of light it needs
3. Give temperature and ventilation tips
4. Explain to client how he can increase the humidity
5. Explain amount and how often to water
6. Recommend to customer a fertilizer and schedule for use
7. Explain to customer how to repot this plant
8. Explain seasonal care of plant
9. Explain pest control

DUTY: A. PERFORM SALES DUTIES

TASK: 13. Process Telephone Orders

****

Performance Objective: Given materials listed below, process telephone orders.

Standard: The description of the customer's order must be correct and complete.

Materials Needed: Order Received, Paper, Pen or Pencil, Telephone.

Enabling Objectives: Must be able to write legibly and spell correctly.
Must know proper telephone etiquette.
Must be able to fill out order form.

Performance Guide:

1. Answer the phone with the business greeting
2. Check with the customer on the product they have in mind
3. Establish time of delivery or pick-up
4. Check on means of payment
5. Make note of the customer's name, credit number, address, directions, and phone number on the order
6. Make note of the product description, quantity and price range
7. Repeat the order to the customer for verification
8. Inform customer of delivery charge (if any)
9. Allow the customer to hang up first
10. Initial the order
11. Date the order
12. File the order with orders to be filled the same day

DUTY: B. PREPARE SOIL AND GROWING MEDIA

TASK: 1. Shred Planting Media

****

Performance Objective: Given materials listed below, shred planting media.

Standard: Planting media must be shredded safely and thoroughly so no lumps or unshredded materials remain.

Materials Needed: Soil, Shredder, Bed, Tractor, Shovel.

Enabling Objectives: Know how to shred planting media and use shredding machine.

Performance Guide:

1. Bring materials to proper moisture levels, approximately 10 percent of "field capacity"
2. Perform service check on shredder before operating, review operator manual for safety use of equipment
3. Place shredder on swept concrete floor to facilitate collection of shredded materials
4. Shovel medium into shredder, controlling the rate to conform to the horsepower and capacity of the machine
5. Collect medium from the shredder and place in bin
6. Dispose of plastic bags or other packaging materials
7. Clean shredder by washing with hose and wiping dry. Return to storage

DUTY: B. PREPARE SOIL AND GROWING MEDIA

TASK: 2. Screen Planting Media

****

Performance Objective: Given materials listed below, screen planting media.

Standard: Medium must be free of all large chunks of soil, trash, sticks, grass, leaves, or other forms of debris.

Materials Needed: Soil, Steamproof Tarp, Soil Thermometer, Shovel, Soil Bed, Screen.

Enabling Objectives: Know how to screen planting media and mix ingredients.
Be able to recognize all planting media.

Performance Guide:

1. Identify the media to be screened
2. Place screen over a wheelbarrow, box or other receptacle
3. Start screening plant media
4. Rescreen, if necessary
5. Shake the screen to pulverize medium and to remove trash and all debris
6. Dispose of debris in container
7. Clean and store equipment

DUTY: B. PREPARE SOIL AND GROWING MEDIA

TASK: 3. Mix Media Materials

****

Performance Objective: Given materials listed below, mix media materials.

Standard: Ratios must be accurate to the nearest cubic foot per cubic yard for each ingredient used in the mix.

Materials Needed: Shovel, Soil Wagon, Mixers, Ratio Schedule, Soil Thermometer, Boil/Steam Generator, Electric Soil Sterilizer.

Enabling Objectives: Be able to experience mixing media materials and mix them properly.
Be able to recognize all plant materials.

Performance Guide:

1. Measure out the specified ratios of ingredients
2. Put ingredients into a mixing box
3. Mix uniformly with a shovel
4. If operating a mechanical mixer the length of time required for mixing will vary
5. Store the mixed medium in a suitable container
6. Clean equipment and return to storage

DUTY: B. PREPARE SOIL AND GROWING MEDIA

TASK: 4. Pasteurize Prepared Media With Steam

****

Performance Objective: Given materials listed below, pasteurize prepared media with steam.

Standard: The moistened medium must be uniformly heated to optimum pasteurization temperature, 71 degrees C.

Materials Needed: Medium, Shovel, Soil Wagon, Steamproof Tarp, Soil Thermometer.

Enabling Objectives: Be able to pasteurize prepared media with steam. Know correct settings on controls.

Performance Guide:

1. Make sure all tools are clean and sterile
2. Check steam applicator to make certain it is in place and working properly
3. Cover medium and seal with given cover
4. Turn on steam at low pressure, take readings with thermal probe to assure that 180 degree F temperature is consistent throughout medium
5. When temperature of medium is consistently 180 degrees F, hold for a minimum of 30 minutes
6. Allow medium to cool and stand until workable
7. Cover medium to avoid contamination
8. Clean all tools and equipment and stores

DUTY: B. PREPARE SOIL AND GROWING MEDIA

TASK: 5. Pasteurize Growing Media with Chemicals

****

Performance Objective: Given materials listed below, pasteurize growing media with chemicals.

Standard: The medium must be uniformly pasteurized with chemicals.

Materials Needed: Medium, Shovel, Soil Wagon, Steamproof Tarp, Soil Thermometer, Water, Chemicals.

Enabling Objectives: Know how to pasteurize growing media with chemicals.
Know how to mix safely.

Performance Guide:

1. Review manufacturer's instructions for safe and effective use of the treatment chemical
2. Wear appropriate protective clothing
3. Moisten medium to approximately 25 percent of field capacity
4. Roll vinyl cover over the top of the bench, leaving ends open to insert the treatment chemical. Secure vinyl cover
5. Activate the treatment chemical and insert under vinyl cover
6. Allow cover to remain on medium for the time specified by the chemical manufacturer
7. Ventilate area after chemical treatment, if necessary
8. Clean all equipment according to manufacturer's directions

DUTY: B. PREPARE SOIL AND GROWING MEDIA

TASK: 6. Mix Fertilizers Into Media

****

Performance Objective: Given materials listed below, mix fertilizers into media.

Standard: Fertilizer will be thoroughly mixed into the medium in such a way that the chemical analysis of any random samples that could be taken would be the same.

Materials Needed: A Medium, Granular Fertilizer, Shovel, Wheel Barrow.

Enabling Objectives: Be able to mix fertilizers into media.
Know how to recognize formulas on the container.

Performance Guide:

1. Measure out fertilizer and medium according to the ratios which are to be used
2. Put medium into a large box, wheel barrow
3. Spread fertilizer on top of the medium
4. Using a garden hoe or shovel, begin at the outer edge and gradually mix the fertilizer into the medium
5. Clean equipment following use and store

DUTY: B. PREPARE SOIL AND GROWING MEDIA

TASK: 7. Prepare Seed Bed

****

Performance Objective: Given materials listed below, prepare seed bed.

Standard: Seed bed must be cultivated to a depth of 3 - 6 inches. Soil disinfestation operations must be completed and organic matter, starter fertilizer, and pre-plant herbicide added to meet the recommended environmental conditions.

Materials Needed: Organic Matter, Starter Fertilizer, Pre-plant Herbicide, Lime, Sulfur, Seedbed, Chemical Soil Sterilants.

Enabling Objectives: Must be able to prepare seedbed - mulch, rake, and take out foreign matter.

Performance Guide:

1. Cultivate seedbed to a depth of 3-6 inches
2. Add organic matter to improve soil texture
3. Disinfect seedbed
4. Apply starter fertilizer
5. Apply pre-plant herbicide

DUTY: B. PREPARE SOIL AND GROWING MEDIA

TASK: 8. Level or Smooth Planting Area

****

Performance Objective: Given materials listed below, level or smooth planting area.

Standard: The entire field must be free of hummocks and potholes and sufficiently smooth for planting the given crop.

Materials Needed: Tractor, Land Leveler, Level, Transit, Target, Stakes.

Enabling Objectives: Knowledge of how to set up and use leveling equipment.
Know how to operate tractor and land leveler.

Performance Guide:

1. Identify area to be smoothed and leveled
2. Service tractor and leveling equipment
3. Drive tractor and equipment to assigned area
4. Adjust leveling equipment
5. Work field in one direction
6. Work the field again at right angles to the direction of the first leveling if necessary
7. Make field sufficiently level and smooth
8. Return unit to storage after use

DUTY: B. PREPARE SOIL AND GROWING MEDIA

TASK: 9. Mark Off Location of Beds

****

Performance Objective: Given materials listed below, mark off the location of the beds.

Standard: Each bed should be approximately 7-8 feet apart.

Materials Needed: Garden, String, Stakes, Seeds, Rake-hoe, Measuring Tape.

Enabling Objectives: Know the correct procedure for marking off the location of beds.
Know how to figure the number of plants per 100 square feet.

Performance Guide:

1. Gather equipment needed
2. Measure each bed about seven feet apart
3. Take string and stakes to mark seven feet
4. Clean equipment
5. Return to storage

DUTY: B. PREPARE SOIL AND GROWING MEDIA

TASK: 10. Shape or Form Beds

****

Performance Objective: Given materials listed below, shape or form beds.

Standard: Center of the beds must be 2 1/2 inches higher than the sides with the sides 3 to 5 inches high.

Materials Needed: Planting Area, Specified Floral Crop, Tractor, Bed Press.

Enabling Objectives: None

Performance Guide:

1. Determine the shape of the bed
2. Service the tractor and bed press
3. Adjust the bed press
4. Shape beds making a trial run
5. Finish shaping beds
6. Clean equipment and store

DUTY: B. PREPARE SOIL AND GROWING MEDIA

TASK: 11. Mark Off Planting Space With Bedwire

****

Performance Objective: Given materials listed below, mark off the planting spaces with bedwire.

Standard: Bedwire must be stretched and secured to posts/stakes at the desired height.

Materials Needed: Posts, Stakes, Mallet, Post Driver, String or Wire, Bedwire.

Enabling Objectives: Must be able to use and read measuring devices.

Performance Guide:

1. Set posts at corners of the bed
2. Roll out bedwire or fibered plastic to be used
3. Stretch bedwire/plastic over bed and tie firmly to posts with string or wire on both ends of the bed
4. Set stakes firmly and at uniform height along both sides of the planting bed
5. Affix wire/plastic to support stakes on both sides of the bed at ground level
6. Return any extra stakes, wire/plastic or other unused items to storage

DUTY: C. PROPAGATING PLANTS, SEEDS, AND CUTTINGS

TASK: 1. Plan Planting Schedules

****

Performance Objective: Given materials listed below, plan planting schedules.

Standard: All plants will be scheduled to be planted in the proper season.

Materials Needed: Calendar, Clipboard, Plant Charts, Seeds, Plants, Reference Books.

Enabling Objectives: Know how to read and interpret tables and calendars.

Performance Guide:

1. Identify the specific season currently under way
2. With the help of reference books, find the correct time certain seeds and plants should be put into the ground
3. List all plants and the time they should be planted on your plant chart
4. Mark your calendar as to the time to plant each type of plants and follow the chart accordingly

DUTY: C. PROPAGATING PLANTS, SEEDS, AND CUTTINGS

TASK: 2. Clean Seed

****

Performance Objective: Given materials listed below, clean the seed.

Standard: Seed must be extracted from fruit, cleaned, dried, and separated without damage to the seed coat of embryo. Stems, trash, and other debris must be separated from the seed.

Materials Needed: Screens, Tumblers, Maccrator, Dewinging Machine, Pneumatic Separator, Fruits Harvested for Seed.

Enabling Objectives: Must know how to clean seeds properly for planting.

Performance Guide:

1. Separate seeds from the fruit:
    a. Seeds in dry fruit other than cones
        (1) Spread dry fruit out on screens
        (2) Air-dry fruit for 1 to 3 weeks
        (3) Thresh seeds
    b. Seeds from cones:
        (1) Open the cones
            (a) Air-dry cones for 2 to 12 weeks until scales open and seeds are exposed
        (2) Shake cones by raking to remove seeds
    c. Seeds in fleshy fruit:
        (1) Wash seeds to remove remaining pulp
        (2) Dry seeds until their moisture ranges from 8 to 15%

DUTY: C. PROPAGATING PLANTS, SEEDS, AND CUTTINGS

TASK: 3. Plant Seeds in Flats or Growing Benches

****

Performance Objective: Given materials listed below, plant seeds in flats or growing benches.

Standard: The seed will be planted at recommended depths and time according to planting chart.

Materials Needed: Seed to be Planted, Necessary Equipment and Supplies, Flats or Growing Benches.

Enabling Objectives: None

Performance Guide:

1. Select seed to be planted
2. Prepare soil mixture
3. Place soil in flats, packs, pots, or trays
4. Prepare soil by smoothing and firming it in the container
5. Prepare seed for planting
6. Sow seed in rows at the recommended depth and spacing
7. Place cheese cloth or other similar material over the top of the seeded container
8. Water lightly until medium is moist
9. Set recommended germination temperature in germination area

NOTE: Some seed require stratification or acid treatment

DUTY: C. PROPAGATING PLANTS, SEEDS, AND CUTTINGS

TASK: 4. Plant Seed Using a Precision Small Seed Type Planter

****

Performance Objective: Given materials listed below, plant seed using a precision small seed type planter.

Standard: The seed will be planted at recommended depths and time according to planting chart.

Materials Needed: Seed to be Planted, Small Seed-type Planter, Measuring Devices.

Enabling Objectives: Know how to properly calibrate and operate small type seed planter.

Performance Guide:

1. Select site to be planted
2. Remove all weeds and foreign material for proper operation of planter
3. Make sure planter is dispensing seeds properly
4. Check tension on wheel springs and planting plate.
5. Plant area with proper amount of seed to be planted
6. Water lightly until medium is moist
7. Clean seeder and other equipment and store properly

DUTY: C. PROPAGATING PLANTS, SEEDS, AND CUTTINGS

TASK: 5. Plant Bulbs

****

Performance Objective: Given materials listed below, plant bulbs.

Standard: Bulbs will be planted in straight lines at the space interval and depth recommended for the particular bulb variety. Bulbs will be labeled.

Materials Needed: Prepared Planting Area, Treated Bulbs, Required Stakes, String, Tools, and Equipment.

Enabling Objectives: Know how to prepare and plant bulbs correctly.

Performance Guide:

1. Identify areas selected for planting
2. Use string and stakes to mark off spacing for rows
3. Using a hoe or bulb planter, cut furrow or make hole for planting the bulbs
4. Place bulbs upright in furrow at spacing intervals and depth specified by the bulb grower
5. Cover the bulbs with soil and tamp lightly to firm the seedbed
6. Clean tools and return them to storage

DUTY: C. PROPAGATING PLANTS, SEEDS, AND CUTTINGS

TASK: 6. Transplant Seedlings

****

Performance Objective: Given materials listed below, transplant seedlings.

Standard: Seedlings must be handled by the leaves and transplanted in the sterile containers with a survival rate of at least 90 percent after one week.

Materials Needed: Seedlings, Sterilized Soil, Pots, Watering Can or Hose and Small Piece of Cardboard, Dibble.

Enabling Objectives: Know the proper techniques of transplanting seedlings.

Performance Guide:

1. Select pots to be used
2. Prepare soil to be used in pots
3. Place soil in pots
4. Transplant seedlings to the pots
5. Firm the soil after setting the seedling
6. Water thoroughly
7. Place pots of seedlings in area to grow
8. Water periodically

NOTE: These procedures may vary according to size of seedlings

DUTY: C. PROPAGATING PLANTS, SEEDS, AND CUTTINGS

TASK: 7. Treat Bulbs to Control Fungi

****

Performance Objective: Given materials listed below, treat bulbs to control fungi.

Standard: Spoilage losses will not exceed two percent.

Materials Needed: Containers, Bulbs or Corms, Powder, Fungicidal Dip.

Enabling Objectives: Know how to identify and treat fungi on bulbs.

Performance Guide:

1. Identify bulbs or corms
2. Determine the method of treatment
3. Read precautions on powder and spray
4. Treat bulbs or corm accordingly
5. Clean tools and restore all items to storage

DUTY: C. PROPAGATING PLANTS, SEEDS, AND CUTTINGS

TASK: 8. Prepare Plants and Cuttings for Propagation

****

Performance Objective: Given materials listed below, prepare plants and cuttings for propagation.

Standard: The miniature plant will consist of stems, roots, and leaves with a supply of food to keep the seedling growing until it can produce its own food supply.

Materials Needed: Seeds, Plants, Scissors.

Enabling Objectives: Know how to select proper cuttings.
Know the correct techniques for preparing plants and cuttings for propagation.

Performance Guide:

1. Gather materials and equipment needed
2. Gather cuttings from plant
3. Keep cuttings moist as they are taken
4. Propagate the plants
5. Clean the equipment and return all equipment to storage

DUTY: C. PROPAGATING PLANTS, SEEDS, AND CUTTINGS

TASK: 9. Take Cuttings

****

Performance Objective: Given materials listed below, take cuttings.

Standard: Type of cutting to be taken will be identified, cuttings will 3 - 5 inches in length, depending on the kind of plant, taken just below a node, free from disease, broken stems and other damage.

Materials Needed: Pruning Shears/Knife, Container, Plants Which Cuttings are to be Taken, Sterilized Growing Media, Mist Table or Area of High Humidity, Low Air Circulation, Hormone Powder.

Enabling Objectives: Be able to identify and plant cutting correctly. Be able to cut cuttings evenly and at proper angle.

Performance Guide:

1. Select plants for cuttings, which exhibit healthy, vigorous growth
2. Use clean, sharp pruners or knife, to collect, and place in suitable containers

   CAUTION:

   a. Take cutting 1/4" below a node
   b. Make cut on a 45 degree angle
   c. Be very careful not to damage the cuttings. Also, cuttings should be dampened, placed in cooler, depending on species, and then shipped or "stuck" as soon as possible

3. Clean and return all equipment to storage

DUTY: C. PROPAGATING PLANTS, SEEDS, AND CUTTINGS

TASK: 10. Stick Cuttings

****

Performance Objective: Given materials listed below, stick cuttings.

Standard: Cuttings will be treated with fungicide, and hormone, inserted into the medium at a depth of 1-2 inches, and spaced correctly for the type of plant cutting used.

Materials Needed: Fresh Tip Cuttings, Fungicidal Dip, Rooting Hormone, Prepared Rooting Beds or Pots Containing a Rooting Medium, Disinfected Knife, Disinfected Dibble.

Enabling Objectives: Know how to properly mix disinfectant.
Know how to disinfect and propagate cuttings.

Performance Guide:

1. Treat cuttings with a fungicidal dip and rooting hormone by immersing the cut end into the dip
2. Spacing the cuttings according to type requirements, insert cuttings into medium at a depth of approximately 1 inch
3. Firm up the medium around each cutting to insure good contact with the soil
4. Place cuttings under mist in propagation bench
5. Clean up the area and return all equipment and materials to proper place

DUTY: C. PROPAGATING PLANTS, SEEDS, AND CUTTINGS

TASK: 11. Label Plants

****

Performance Objective: Given materials listed below, label plants.

Standard: All labels must be written with pencil or waterproof ink. Plant labels must include: species name, cultivar name, date planted, treatment, and the name of the worker.

Materials Needed: Labels, Pencil, Waterproof Pen, Grease Pencil, Block of Plants.

Enabling Objectives: Print or write small and legibly.
Recall abbreviations used in place of complete plant names, dates and treatments.
Identify plant species and cultivar.

Performance Guide:

1. Select weatherproof label
2. Print specified information on label, generally starting at the top and printing lengthwise down the label toward the pointed end, leaving room for the label to be inserted into the container without obscuring the message
3. Place label in medium using the predetermined method:
   CAUTION: To avoid confusion of cultivars, all plants at a specified horticultural business must be labeled by the same method
   a. Place the plant bearing the label in the upper left hand corner of the block as you face it from the aisle and then people will know that all plants in front of and to the right will be the same cultivar
   b. Place the label at the front of the left row, then all plants in rows to the right will be the same cultivar

DUTY: C. PROPAGATING PLANTS, SEEDS, AND CUTTINGS

TASK: 12. Transplant Trees and Shrubs

****

Performance Objective: Given materials listed below, transplant trees and shrubs.

Standard: Trees and shrubs must be reset at their original planting depth.

Materials Needed: Spade, Tree or Shrub, Planting Site, Starter Fertilizer, Shovel, Wheel Barrow, Anti-transpirant.

Enabling Objectives: Be able to transplant trees carefully and properly.
Be able to identify proper depth and width of hole.

Performance Guide:

1. Determine if season and weather conditions are suitable for transplanting trees and shrubs
2. Dig a hole for tree or shrub at the transplanting site
   Note: Keep the topsoil that is removed from hole separated from the subsoil
   a. Make hole twice the size of soil ball
   b. Make hole large enough for roots to be outstretched for bare-root trees and shrubs
3. Install a drainage tile in hole if area is poorly drained
4. Add enough topsoil to the bottom of the hole that selected tree or shrub will set on topsoil and set at its original planting depth
   a. Shape topsoil into a cone-shaped mound when planting bare-root trees or shrubs
   b. Place topsoil evenly across the bottom of a hole for balled or burlapped trees and shrubs

DUTY: C. PROPAGATING PLANTS, SEEDS, AND CUTTINGS

TASK: 13. Provide Winterization of Plants

****

Performance Objective: Given materials listed below, provide winterization of plants.

Standard: Appropriate cover (2 per greenhouse) will be applied. The temperature will be maintained at the prescribed range for the growing plants.

Materials Needed: Plastic, Props, Slats and Boards to Bind Plastic, Heater and Thermostat, Fan for Air Circulation, Repair Kits.

Enabling Objectives: Be able to understand weather warnings.
Know how to properly secure area before storms.
Be able to regulate thermostats.
Be able to repair glazing and plant coverings.

Performance Guide:

1. Check and cover all areas of greenhouse
2. Secure plastic with slats and boards
3. Tie down and equip with blower to circulate air in between covers
4. Secure all areas that may pull loose and flap in wind
5. Check temperature of all areas
6. Check heater and heater fan
7. Apply card - care cards to plants for special care

DUTY: C. PROPAGATING PLANTS, SEEDS, AND CUTTINGS

TASK: 14. Select Seed Varieties

****

Performance Objective: Given materials listed below, select seed varieties.

Standard: All seed books and catalogues will be checked for types and cultivars wanted.

Materials Needed: Books, Latest Catalogues, Outlet Materials from Companies, Newest Varieties for A&M.

Enabling Objectives: Be able to identify kinds, types, of plants and availability.
Knowledge of local weather and soil area.

Performance Guide:

1. Identify types of seeds wanted
2. Check to see if types selected are adapted to local area
3. Study resistance of selected seeds to disease and insects
4. Check on prices and availability
5. Order selected seeds

DUTY: C. PROPAGATING PLANTS, SEEDS, AND CUTTINGS

TASK: 15. Transplant Cuttings

****

Performance Objective: Given materials listed below, transplant cuttings.

Standard: Cuttings must be handled with care and transplanted in the sterile containers with a survival rate of at least 90% after one week.

Materials Needed: Cuttings Which Have Rooted, Dibble, Growing Medium, Sterile Containers.

Enabling Objectives: Know how to sterilize containers.
Know how to prepare growing media.

Performance Guide:

1. Identify the cuttings to be transplanted
2. Fill the sterile containers with medium
3. Using a dibble, make holes in the medium into which the cuttings are to be transplanted
4. Transplant the cuttings using label to help remove cuttings from flat/bench
   CAUTION:
   a. Handle cuttings carefully, spreading roots outward in pot before filling
   b. Do not allow cuttings to dry out during transplanting process
5. Water transplants immediately

DUTY: C. PROPAGATING PLANTS, SEEDS, AND CUTTINGS

TASK: 16. Apply Rooting Hormone

****

Performance Objective: Given materials listed below, apply rooting hormone.

Standard: When cuttings are treated they usually develop within twenty-one days.

Materials Needed: Cuttings, Indolebutyric Acid, Talc, Gloves.

Enabling Objectives: Know how to properly make diagonal cuts and to use basic equipment.
Know proper use of Rotane hormone.

Performance Guide:

1. Make proper cuts on cuttings
2. Keep all cuttings and soil clean
3. Wear gloves to protect hands and goggles to protect eyes
4. Place cuttings properly into sterile soil bed
5. Cover with plastic
6. Water accordingly

DUTY: D. CONTROLLING THE PLANT ENVIRONMENT

TASK: 1. Control Light Requirements by Using Shade Cloth

****

Performance Objective: Given materials listed below, control light requirements by using shade cloth.

Standard: The selected cloth must yield the percent shade the plant requires.

Materials Needed: Plant, Light Requirements, Shade Cloth.

Enabling Objectives: Know the light requirements of various plants.

Performance Guide:

1. Select plants that have shade requirements
2. Determine percent shade needed
3. Determine length of time plant must be shaded
4. Expose plants to light required by covering with shade cloth
5. Continue to control the light for the required time

DUTY: D. CONTROLLING THE PLANT ENVIRONMENT

TASK: 2. Set Thermostats to Control Environment

****

Performance Objective: Given materials listed below, set thermostats to control environment.

Standard: Adjust thermostat to maintain a constant temperature within = or - 2 degrees of the proper temperature.

Materials Needed: Greenhouse, Thermostats.

Enabling Objectives: Know how to read thermostat.
Know how to adjust thermostat.

Performance Guide:

1. Determine temperature required for plants being grown in greenhouse and/or stored in other structures
2. Adjust thermostat to desired temperature
3. Check the accuracy of the thermostat by placing a thermometer in the greenhouse and/or other structures being regulated by the thermostat
4. Reset thermostat to adjust for any difference between thermometer and thermostat reading
5. Check temperature of greenhouse and/or other structures periodically to insure desired constant temperature

DUTY: D. CONTROLLING THE PLANT ENVIRONMENT

TASK: 3. Cultivate Plants

****

Performance Objective: Given materials listed below, cultivate plants.

Standard: The soil around the plants must be loosened without severely disturbing the root system.

Materials Needed: Hoe, Rake, Water Hose, Shovel, Pick, Plants Needing Aeration, Weeds to be Controlled.

Enabling Objectives: Know a step by step procedure in cultivating plants.
Be able to distinguish between weeds, foreign plants, and regular plants.

Performance Guide:

1. Postpone cultivation if soil is too wet or too dry
2. Determine size of area and purpose of cultivation
3. Select the type of tools and equipment desired
4. Remove all rocks from area
5. Cultivate the sorts around the plants
6. Water area if extremely dry

DUTY: D. CONTROLLING THE PLANT ENVIRONMENT

TASK: 4. Water Plants and Nursery Stock

****

Performance Objective: Given materials listed below, water plants and nursery stock.

Standard: Water the plants or nursery stock until the media is soaked completely.

Materials Needed: Plants or Nursery Stock in a Greenhouse.

Enabling Objectives: Be able to provide the equivalent of 1 inch of rainfall on plants growing in the field.

Performance Guide:

1. Determine when water is needed
2. Determine the length of time and rate water should be applied
3. Determine time of day water should be applied
4. Water container stock until the soil in the container is completely soaked
5. Water field grown with irrigation system at the rate equivalent to 1 inch of rainfall
6. Inspect the plants to determine if water is needed
7. Determine the length of time water should be applied according to:
    a. Texture of soil
    b. Type of plant
    c. Size of plant
    d. Environment

DUTY: D. CONTROLLING THE PLANT ENVIRONMENT

TASK: 5. Apply Mulches

****

Performance Objective: Given materials listed below, apply mulches.

Standard: Mulch must be applied properly to protect plants.

Materials Needed: Mulch, Shovel, Rake, Plants.

Enabling Objectives: Know how much mulch should be enough to protect plant.

Performance Guide:

1. Prepare soil and plants for mulch, if required
2. Spread mulch evenly over area
3. Take a generous amount of mulch and spread evenly around crown of trees or plant
4. Smooth out with rake, making sure all of plant is protected form erosion and weather
   Note: Mulch thickness will vary with type mulch used

DUTY: E. APPLYING FERTILIZER AND CHEMICALS

TASK: 1. Calculate Fertilizer Requirements

****

Performance Objective: Given the materials listed below, calculate fertilizer requirements.

Standard: Fertilizer requirements must be calculated by comparing current nutrient levels with optimum levels of plant nutrients in the growing medium. The amount of each nutrient needed to obtain the optimum level of growth must be computed.

Materials Needed: Soil Test Results, Plant Production Manual.

Enabling Objectives: Be able to evaluate soil test results.
Be able to recall plant nutrient names.
Be able to look up the recommended growing media nutrient level.

Performance Guide:

1. Obtain soil test results
2. Identify current levels of plant nutrients in the growing medium
3. Identify optimum levels of plant nutrients in the growing medium
4. Compare optimum levels with current levels of nutrient in the growing medium
5. Figure the amount of each nutrient needed to raise current level to the optimum level

DUTY: E. APPLYING FERTILIZER AND CHEMICALS

TASK: 2. Calculate Pesticide Concentrations

****

Performance Objective: Given the materials listed below, calculate pesticide concentrations.

Standard: The recommended concentration calculation must include size of area, amount of plants, and application equipment. The pesticide concentration must contain the manufacturer's recommended percentage of pesticide for specified pest and/or plant species.

Materials Needed: Crop, Pesticide Label, Spray Equipment.

Enabling Objectives: Must be able to add, subtract, multiply, and/or divide.
Must be able to read pesticide label.
Must be able to recall units of measurement (volume/weight/area/speed).
Must be able to recall characteristics of pesticide application equipment (sprayers).

Performance Guide:

1. Read label of specified pesticide
2. Identify the recommended rate for particular pest and crop species from pesticide label
3. Estimate the size of area and/or amount of plants to be treated
4. Select application equipment to be used for applying pesticides
5. Estimate the number of gallons (liters) of pesticide needed to treat the area
6. Identify the amount of pesticide needed to treat the area:
   CAUTION: Follow manufacturer's recommendations for reducing or increasing the amount of pesticide solution to be mixed
   a. Use the same proportion of pesticide to carrier as recommended in pesticide label:
      (1) Convert amount of carrier listed on label's rate to estimated amount of carrier needed
      (2) Convert amount of concentrated pesticide listed on label's rate to an amount that will be proportionate to estimated amount of carrier

DUTY: E. APPLYING FERTILIZER AND CHEMICALS

TASK: 3. Calculate Fertilizer Concentration

****

Performance Objective: Given the materials listed below, calculate fertilizer concentration.

Standard: The fertilizer concentration for the specified frequency of application must equal the fertility needs of the specified crop.

Materials Needed: Crop, Nutrient Formula Chart, Fertilizer Requirements.

Enabling Objectives: Students must be able to measure, mark, and use equipment at hand for determining areas and concentrations.

Performance Guide:

1. Obtain fertilizer requirements for specified crop being fertilized
2. Select frequency of fertilizer application:
    a. Constant feed
    b. Intermittent feed (generally every 2nd or 3rd irrigation)
3. Determine the ratio at which injector or proportioner mixes fertilizer concentration with irrigation water
4. Determine the amount of soluble fertilizer needed to make fertilizer concentration:
    a. Obtain a nutrient formula chart
    b. Find injection ratio and desired ppm of nutrient on nutrient formula chart
    c. Determine amount of soluble fertilizer needed to make 1 gallon of fertilizer concentrate

DUTY: E. APPLYING FERTILIZER AND CHEMICALS

TASK: 4. Calibrate Fertilizer Application Equipment

****

Performance Objective: Given the materials listed below, calibrate fertilizer application equipment.

Standard: The entire area is to be measured and identified. Proper adjustments must be made to equipment.

Materials Needed: Fertilizer Spreader, Measuring Devices, Water, Detergent, Basic Hand Tools.

Enabling Objectives: Students must be able to read calibrations and numbers on equipment.

Performance Guide:

1. Insert and measure fertilizer
2. Check marks on calibrator
3. Check to see openings are clear of obstruction
4. Clean and check spreader and cover
5. Lubricate and oil equipment

DUTY: E. APPLYING FERTILIZER AND CHEMICALS

TASK: 5. Collect Soil Samples

****

Performance Objective: Given the materials listed below, collect soil samples.

Standard: The core sample must be representative of one uniform growing area. The composite soil sample must be uniformly mixed, dried, and screened to yield one pint of soil.

Materials Needed: Field, Bench/Bed, Soil Probe, Soil Auger, Plastic Bucket.

Enabling Objectives: Must be able to read soil survey map.
Must be able to identify soil treatments performed on fields, beds or potted crops from crop record.
Must be able to write or print information on laboratory information sheet.

Performance Guide:

1. Identify growing area (field, bench, container) from where sample will be taken:
    a. Field sample:
        (1) Identify field on a soil survey map
        (2) Note any soil differences within the field:
            (a) Examine field for differences in soil type, soil color, soil texture, slope, crop rotation and fertility practices
            (b) Avoid combining any of the known soil differences when taking a particular composite sample
            NOTE: A composite sample should not represent more than 20 acres
        (3) Insert a soil probe or soil auger to a depth of 6"-7" or to tillage depth if deeper
        NOTE: Remove any mulch from the site of core sample
        (4) Remove core sample from probe/auger into a plastic bucket
        (5) Take 14-19 additional core samples at random while walking in a zigzag pattern across the field
        (6) Mix the 15-20 core samples together to form a composite sample

DUTY: E. APPLYING FERTILIZER AND CHEMICALS

TASK: 5. Collect Soil Samples (Continued)

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- b. Bench crops/ground beds:
  - (1) Insert soil probe/auger to a depth of 6-7" into media in bench/bed
    NOTE: Scrape mulch away from site of core sample
  - (2) Take at least 9 additional core samples from 9 different locations on bench/bed
  - (3) Mix the 10 core samples together to form a composite sample in a plastic bucket
- c. Potted crops:
  - (1) Insert soil probe/auger to a depth of 6-7" in media in a pot representative of the crop
    NOTE: Only crops with the same media and fertility practices should be included in the same composite soil sample
  - (2) Take at least 9 additional core samples from 9 randomly selected pots
  - (3) Mix the 10 core samples together to form a composite sample

2. Dry composite sample on a clean non-absorbent surface
3. Screen any debris from samples
4. Retain at least one pint of composite soil sample for analysis
5. Complete needed laboratory information on information sheet

DUTY: E. APPLY FERTILIZER AND CHEMICALS

TASK: 6. Test Soil Sample

****

Performance Objective: Given the materials listed below, test the soil sample.

Standard: The soil tests for specific composite sample must be determined and performed. All manufacturer's directions on use of soil testing equipment must be followed.

Materials Needed: Scales, Meter pH, Reagent pH, Thermometer, Filter Paper, Hydrion Papers, Distilled Water, Soil sample Box, Soil Information Sheet, Composite Soil Sample, Solubridge Soil Sample, Soil Fertility Test Kit, 250 ml Graduated Cylinder, 100 ml Graduated Cylinder.

Enabling Objectives:
Must be able to read soil testing equipment instructions.
Must be able to read soil test kit instructions.
Must be able to recall requirements of a soil sample.
Must be able to recall plant nutrient names.
Must be able to recall scale used to measure pH.

Performance Guide:

1. Identify soil test to perform on specific composite soil samples
2. Perform soil tests:
    a. Fertility test:
        (1) Obtain a soil fertility test kit
        (2) Identify the nutrient tests to be performed
        (3) Follow manufacturer's directions in performing all tests
    b. Test to determine pH:
        (1) Perform pH test using a pH meter according to manufacturer's recommendations
        (2) Perform pH test using hydrion papers according to manufacturer's recommendations
        (3) Perform pH test using a reagent according to manufacturer's recommendations

****

c. Test for soluble salts:
  - (1) Obtain solubridge soil tester
  - (2) Prepare soil sample for salinity test:
    - (a) Weigh out 20 grams of air-dry soil
    - (b) Place soil in a 250 ml beaker
    - (c) Add 100 ml of distilled water to the soil
    - (d) Stir thoroughly

      NOTE: After sample and water have been stirred, allow sample to stand for 30 minutes. Stir occasionally during this period
    - (e) Filter sample into a 100 ml graduated cylinder
    - (f) Discard filter paper and soil
    - (g) Record the temperature of the extract in the graduated cylinder
  - (3) Follow manufacturer's directions in performing salinity tests

DUTY: E. APPLYING FERTILIZER AND CHEMICALS

TASK: 7. Mix Chemicals

****

Performance Objective: Given the materials listed below, mix chemicals.

Standard: The chemicals must be mixed according to manufacturer's instructions and follow all safety recommendations.

Materials Needed: Specified Number of Plants or Land Area to be Treated, Water, Chemicals, Tanks, Safety Equipment.

Enabling Objectives: Must be able to recall chemical safety rules. Must be able to follow manufacturer's specifications.

Performance Guide:

1. Review mixing procedures as provided by the manufacturer to determine exact procedures to be followed in mixing and also the amount of spray solution required
2. Review safety precautions and measures to be followed in mixing
3. Mix the required amount of spray solution
4. Clean all containers and other items used for mixing as recommended by manufacturer, and return them along with any unused materials to their proper place when the task is completed
5. Dispose of used cartons or other contaminants in accordance with current Environmental Protection Agency regulations
   CAUTION: Do not burn pesticide containers

DUTY: E. APPLYING FERTILIZER AND CHEMICALS

TASK: 8. Apply Chemicals

****

Performance Objective: Given the materials listed below, apply the chemicals.

Standard: All necessary safety precautions should be followed, the solution must be applied uniformly at the recommended rate, covering the plants uniformly and thoroughly.

Materials Needed: Designated Land Area, Greenhouse Plants, Chemical Solution, Hand Sprayer, Safety Equipment, Proper Clothing.

Enabling Objectives: Must be able to recall chemical safety rules. Must be able to follow manufacturer's specification.

Performance Guide:

1. Review safety procedures
2. Check the sprayer to make sure it is in good working order
3. Using water rather than spray solution, calibrate the sprayer to apply the precise amount of spray desired
4. Put on the appropriate clothing for meeting safety requirements
5. Put spray solution in sprayer
6. Bring spray tank to recommended pressure
7. Apply spray to plants, until spray begins to drip off leaf surface. Spray underside of leaves also

DUTY: E. APPLYING FERTILIZER AND CHEMICALS

TASK: 9. Apply Dry Fertilizer

****

Performance Objective: Given the materials listed below, apply dry fertilizers.

Standard: Plants must have received the amount of fertilizer designated on the fertilizer labels.

Materials Needed: Plants Requiring Fertilization, Dry Fertilizer, Protective Coverings, Application Equipment.

Enabling Objectives: Students will be able to set controls and estimate the amount of fertilizer being used.

Performance Guide:

1. Determine plants to be fed
2. Identify if this is to be a routine feeding
3. Examine plant closely if this is not a routine feeding
4. Determine plant size
5. Determine ratio of elements
6. Determine rate of application
7. Select application method and equipment needed
8. Use a surface application if desired
    a. Apply fertilizer as spreader instructs
    b. Water or hoe into soil
9. Use trench method if desired
    a. Dig trench
    b. Add fertilizer to composted soil
    c. Fill trench in with fertilized soil
10. Use punch-bar method if desired
    a. Make holes
    b. Inject fertilizer
    c. Fill holes
    d. Close with a push of the heel
11. Use compressed air feeding if desired
    a. Make holes with a compressed air drill or auger
    b. Force of gasses
    c. Place fertilizer in hole
    d. Force compressed air in hole

DUTY: E. APPLYING FERTILIZER AND CHEMICALS

TASK: 9. Apply Dry Fertilizer (Continued)

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12. Use spikes or pellets if desired
    a. Determine number and location of spikes or pellets
    b. Insert
    c. Water area
13. Clean and store equipment

DUTY: E. APPLYING FERTILIZER AND CHEMICALS

TASK: 10. Apply Liquid Fertilizer

****

Performance Objective: Given the materials listed below, apply liquid fertilizer.

Standard: The liquid fertilizer must be applied in the amounts designated.

Materials Needed: Crop to be Fertilized, Automatic Irrigation System, Desired Ratios of Fertilizer Liquid to Water, Injection System.

Enabling Objectives: Be able to properly mix amounts of fertilizer and water.

Performance Guide:

1. Determine the amount of irrigation water to be applied for unit area of crop
2. Determine the amount of liquid fertilizer required to give the desired ratios
3. Inject liquid fertilizer into irrigation system in accordance with the requirements
   NOTE: Check injector throughout watering to insure consistent fertilizer application
4. Time the irrigation to apply the required amount of fertilizer
5. Flush the system following use to prevent corrosion and deterioration of the system
   Caution: If detergent is used in flushing select a detergent that will not harm the crop

DUTY: E. APPLYING FERTILIZER AND CHEMICALS

TASK: 11. Apply Dry Chemicals to Control Weeds

****

Performance Objective: Given the materials listed below, Apply dry chemicals to control weeds.

Standard: Chemical application must follow label instructions.

Materials Needed: Area with Undesirable Weeds, Dry Herbicide, Applicators, Protective Coverings.

Enabling Objectives: Know how to identify different plants. Be able to practice safety in handling chemicals.

Performance Guide:

1. Identify weed pest
2. Identify desirable plants in area
3. Protect desirable plants
4. Determine wind and scatter area
5. Select appropriate herbicide
6. Select applicator
   a. Small hand-held granular or dust applicator, or wax bars for small areas with scattered weeds
   b. Gravity flow hopper, broad-cast spreader, etc. for large areas
7. Wear proper safety coverings
8. Follow proper preparation procedures including removal of debris for lawn application
9. Determine rate of application
10. Calibrate applicator
11. If a dust formulation is used:
    a. Determine wind speed
    b. Postpone application if greater than 5 mph
12. Take precautions to avoid contact with buildings, cars, or people
13. Apply herbicide using a double coverage method
14. Get rid of chemical
    a. Use up chemical on the job if possible
    b. Dispose of chemical according to instructions and/or law
15. Store unused chemical in dry well-ventilated room
16. Clean and store equipment
17. Check back later to see if an additional application is necessary

DUTY: E. APPLYING FERTILIZER AND CHEMICALS

TASK: 12. Apply Liquid Chemicals to Control Weeds

****

Performance Objective: Given materials listed below, apply liquid chemicals to control weeds.

Standard: All chemical applications must follow label instructions.

Materials Needed: Weeds, Weed Pest, Plants, Site, Herbicide, Applicator, Proper Protective Clothing, Storage for Unused Chemical.

Enabling Objectives: Be able to distinguish between broadleaf plants to be killed.

Performance Guide:

1. Identify weed pest
2. Identify desirable plants in the area
3. If application is to be made in an urban area
    a. Determine wind speed and direction
    b. Take precautions to avoid contact with buildings, cars, people, and gardens
4. Determine if pre-emergent or post-emergent should be used
5. Select a herbicide
6. Select applicator
    a. A hand-held sprinkler nozzle, cane tube or brush and can for small areas with few scattered weeds
    b. A liquid spreader or high pressure sprayer for large areas
7. Wear proper protective clothing
8. Follow proper preparation procedures including removal of debris for lawn application
9. Determine rate of application
10. Calibrate applicator
11. Apply herbicide using a double coverage method
12. Get rid of chemical
    a. Use up chemical on the job if possible
    b. Dispose of chemical according to instructions and/or law
13. Store unused chemical in dry well-ventilated room
14. Clean and store equipment
15. Check back later to see of an additional application is necessary

DUTY: E. APPLYING FERTILIZER AND CHEMICALS

TASK: 13. Apply Fertilizer With Centrifugal Spreader/Cyclone Spreader

****

Performance Objective: Given materials listed below, apply fertilizer with centrifugal spreader/cyclone spreader.

Standard: All applications should be make uniformly over the plot and with = or - 3% of the recommendations of the state experiment station for the particular plants on the plot.

Materials Needed: Centrifugal Spreader/Cyclone Spreader, Operator's Manual, Hopper, Fertilizer.

Enabling Objectives: Be able to read and follow instructions.

Performance Guide:

1. Check operator's manual for instructions
2. Determine spreader setting for rate per area
3. Close rate gate(s)
4. Fill hopper with fertilizer
5. Determine direction of travel for uniform application
6. Open rate gate after machine is in motion
7. Walk at steady, even pace while operating spreader

DUTY: E. APPLYING FERTILIZER AND CHEMICALS

TASK: 14. Dispose of Chemicals and Container Properly

****

Performance Objective: Given materials listed below, dispose of chemicals and container properly.

Standard: Dispose of chemicals and container carefully and correctly.

Materials Needed: 55 Gallon Drum Marked DANGER, Protected Area, Chemicals, Container.

Enabling Objectives: Know and understand all safety precautions and disposal methods.

Performance Guide:

1. Place all chemicals and containers in 55 gallon drum
2. After drum is full close tightly and place in a protected area, away from people
3. Materials will be disposed at a regular safety disposal pick-up area

DUTY: E. APPLYING FERTILIZER AND CHEMICALS

TASK: 15. Properly Fog Buildings and Other Areas

****

Performance Objective: Given materials listed below, properly fog buildings and other areas.

Standard: All areas are to be covered and closed for effective measure.

Materials Needed: Fogging Machine, Danger Signs, Covers and Plastic, Hammers and Tool to Tie and Tack Down.

Enabling Objectives: Knowledge of safety equipment.
Know how to use safety equipment and clothing.
Be able to use machine properly.

Performance Guide:

1. Identify buildings and area to be fogged
2. Cover area
3. Close all door windows etc.
4. Mark off area or building with DANGER signs
5. Safety marker installed

DUTY: F. HARVESTING PLANTS, SEEDS, AND CUTTINGS

TASK: 1. Grade Plants

****

Performance Objective: Given materials listed below, grade plants.

Standard: Grade the plants according to the U.S.A. Standard for Nursery Stock, American Association of Nurserymen with no deviation.

Materials Needed: Plants, Plant Grading System.

Enabling Objectives: Know how to grade plants properly and with accuracy according to U.S.A. Standards for Nursery Stock.

Performance Guide:

1. Check plants for size
2. Check plants for form or shape
3. Check plants for texture
4. Check plants for color of foliage
5. Check plants for disease, insects, and mechanical damage
6. Grade or group plants according to the U.S.A. Standard for Nursery Stock

DUTY: F. HARVESTING PLANTS, SEEDS, AND CUTTINGS

TASK: 2. Count and Bunch Flowers

****

Performance Objective: Given materials listed below, count and bunch flowers.

Standard: The count must be 100% accurate, stems must be pointing in the same direction and of uniform length when placed in the bunch, bunches will be firmly bound together by double or triple wrapping with a rubber band.

Materials Needed: Flowers, Standards to be Followed in Counting and Bunching.

Enabling Objectives: Know how to count properly.

Performance Guide:

1. Become familiar with prescribed standards for counting and bunching before beginning the task
2. Identify the flowers to be counted and bunched
3. Count and bunch flowers according to the standards set for the specific flower type

DUTY: F. HARVESTING PLANTS, SEEDS, AND CUTTINGS

TASK: 3. Remove Saleable Plants from Beds or Benches

****

Performance Objective: Given materials listed below, remove saleable plants from beds or benches.

Standard: All of the plants removed must be saleable and no more than 10% of the saleable plants on a given bench should be overlooked.

Materials Needed: Collection of Potted Plants Growing in Greenhouse Beds or Benches.

Enabling Objectives: None

Performance Guide:

1. Review order and decide the standard for marketable plants of a particular species
2. Collect the saleable plants and remove them from the others, overlooking no more than 10% of the saleable plants

DUTY: F. HARVESTING PLANTS, SEEDS, AND CUTTINGS

TASK: 4. Remove Bedwire or Fibered Plastic from Harvested Areas

****

Performance Objective: Given materials listed below, remove bedwire or fibered plastic from harvested areas.

Standard: All wire or string holding bedwire/fibered plastic prior to the planting of a new crop.

Materials Needed: Bedwire or Fibered Plastic in a Greenhouse Flower Bed From Which a Crop has been Harvested.

Enabling Objectives: None

Performance Guide:

1. Identify the bed from which bedwire/fibered plastic is to be removed
2. Remove all weeds, grass and debris from bed
3. Remove string or wire securing bedwire/fibered plastic to stakes
4. Roll up bedwire/fibered plastic into a tightly compacted roll
5. Store bedwire/fibered plastic for future use

DUTY: F. HARVESTING PLANTS, SEEDS, AND CUTTINGS

TASK: 5. Label Harvested Plants by Common Names

****

Performance Objective: Given materials listed below, label harvested plants by common names.

Standard: Identify and label each plant with the accepted common name.

Materials Needed: Plants, Labels, Pencil, Pen or Special Marker.

Enabling Objectives: Know how to label harvested plants by common names.

Performance Guide:

1. Determine the name of the plant to be labeled
2. Print name of plant on the label with specified marker
3. Attach label to a sturdy branch of the plant

DUTY: G. STORE, SHIP, AND TAKE INVENTORY

TASK: 1. Bundle Plants

****

Performance Objective: Given materials listed below, bundle plants.

Standard: The plants will be bundled in uniform bundles with a predetermined number in each bundle.

Materials Needed: Plants, Soft String, Labels, Pen or Pencil.

Enabling Objectives: Know how to count plants.

Performance Guide:

1. Select plants to be bundled
2. Determine number of plants per bundle
3. Place plants of same size in bundles
4. Secure the bundle by tying a soft string around it
5. Label and date plants

DUTY: G. STORE, SHIP, AND TAKE INVENTORY

TASK: 2. Wrap Plants

****

Performance Objective: Given materials listed below, wrap plants.

Standard: Plants will be wrapped with paper or other material to prevent damage and maintain moisture around the roots.

Materials Needed: Plants, Peat Moss or Sawdust, Paper, Soft String or Rubber Band, Pen or Pencil.

Enabling Objectives: Know how to write legibly.

Performance Guide:

1. Select bundles of plants to be wrapped
2. Place moist peat moss, saw dust, or other materials on the roots
3. Wrap paper or other material securely around the lower half of the bundle of plants
4. Tie soft string or rubber band around paper to hold it in place
5. Label and date plants

DUTY: G. STORE, SHIP, AND TAKE INVENTORY

TASK: 3. Pack Plants

****

Performance Objective: Given materials listed below, pack plants.

Standard: The large ends of the bundles must alternate with the small ends to pack bundles evenly.

Materials Needed: Plants in Bundles, Carton or Crate, Tape, Pen or Pencil.

Enabling Objectives: Know how to write legibly.

Performance Guide:

1. Select bundled and wrapped plants to be packed
2. Determine the number of bundles to be packed in each carton or crate
3. Place bundles in alternating layers in the carton or crate
4. Close the carton or crate and secure it for shipment
5. Label and date the plants

DUTY: G. STORE, SHIP, AND TAKE INVENTORY

TASK: 4. Bunch Plants

****

Performance Objective: Given materials listed below, bunch plants.

Standard: All liners will be bunched in uniform bunches by size and in predetermined numbers.

Materials Needed: Liners of plants, Soft String or Rubber Bands, Labels, Pen or Pencil.

Enabling Objectives: Know how to write legibly.

Performance Guide:

1. Select liners to be bunched
2. Determine number of liners to be in a bunch
3. Bunch liners according to size
4. Tie soft string or rubber bands around the liners to secure the bunch
5. Label and date the bunches of plants

DUTY: G. STORE, SHIP, AND TAKE INVENTORY

TASK: 5. Pack Shrubs

****

Performance Objective: Given materials listed below, pack shrubs.

Standard: The bunched liners will be packed in cartons or crates with the roots of each bunch facing each other.

Materials Needed: Bunched Liners, Cartons or Crates, Tape, Labels, Pen or Pencil.

Enabling Objectives: Know how to print legibly.

Performance Guide:

1. Select bunched liners to be packed
2. Determine the number of bunches to be packed in each carton or crate
3. Place bunches in carton or crate with roots adjoining roots
4. Close the carton or crate and secure it for shipment
5. Label and date the plants

DUTY: G. STORE, SHIP, AND TAKE INVENTORY

TASK: 6. Check Received Merchandise Against Invoice Listings

****

Performance Objective: Given materials listed below, check Received merchandise against invoice listings.

Standard: All items not received or damaged must not be noted on invoice.

Materials Needed: Merchandise, Invoice.

Enabling Objectives: Be able to read invoice.

Performance Guide:

1. Arrange Received merchandise in an orderly group to be checked
2. Begin with the first item in the invoice and check all items to determine if all merchandise was delivered
3. Report all items not received
4. Check all items for damage
5. Report all damaged items
6. Sign invoice

DUTY: G. STORE, SHIP, AND TAKE INVENTORY

TASK: 7. Keep Current Inventory of Products for Sale

****

Performance Objective: Given materials listed below, keep current inventory of products for sale.

Standard: Posting must be done, without error, and provide the following information: quantities on hand, quantities on order, quantities on back order, and quantities sold in any given period.

Materials Needed: Stock Card, Inventory Card, Stock or Quantity on Hand.

Enabling Objectives: Know how to fill out stock card and inventory card.
Be able to read inventory sheet.

Performance Guide:

1. Fill out a card for every item stocked
2. When item are ordered, post the necessary information on the inventory card
3. When orders are received, enter the quantity on the card and add to the number already in stock
4. Post back orders along with items received
5. When items are sold, post the necessary information on the inventory card
6. Subtract the quantity sold from the quantity on hand
7. Flag cards for immediate order when the quantity of an item reaches the established minimum and notify purchasing agent
8. Flag cards to show which items are on back order

DUTY: G. STORE, SHIP, AND TAKE INVENTORY

TASK: 8. Package Orders for Shipment

****

Performance Objective: Given materials listed below, package orders for shipment.

Standard: Satisfactory performance is achieved when the following criteria is met:

1. Padding is placed between products in the containers.
2. Invoice is placed in container and container is closed, sealed and addressed.

Materials Needed: Products, Box, Carton and/or Crate, Padding, Invoice, Pen/Pencil.

Enabling Objectives: Know how to write clearly.
Know how to use padding correctly.

Performance Guide:

1. Review the packaging and shipping procedures for the particular order being filled
2. Package the plants following requirements for safe shipment for the kind of plants being shipped
   a. Make certain plants are in good condition when packed
   b. Pack flowers firmly to prevent movement in shipping
   c. Provide insulation for temperature control and to prevent the plants from becoming too dry. Waxed paper, boxes or plastic wrapper, should be available for achieving those purposes
3. Include the necessary invoices and shipping labels
4. Clean up the work area after completion of task

DUTY: G. STORE, SHIP, AND TAKE INVENTORY

TASK: 9. Prepare Invoices and Shipping Labels

****

Performance Objective: Given materials listed below, prepare invoices and shipping labels.

Standard: The invoices and labels will be completed without error and extensions and totals must be verified by the instructor.

Materials Needed: Blank Invoices, Labels, Necessary Data, Pen/Pencil.

Enabling Objectives: Know how to fill out an invoice.
Be able to write clearly.

Performance Guide:

1. On the invoice indicate the receiver and buyer
2. Check to determine presence of packer's signature
3. Note the method of shipment
4. Indicate quantity shipped, plant description, extend unit price, and total
5. Add sales tax, if applicable
6. Verify shipment against quantity
7. Total prices
8. Complete shipping/labels indicating receiver, sender, purchase order number and invoice number

DUTY: G. STORE, SHIP, AND TAKE INVENTORY

TASK: 10. Place Plant Materials in Storage

****

Performance Objective: Given materials listed below, place plant materials in storage.

Standard: No plants should be damaged in the process, and instructor approval must be obtained.

Materials Needed: Storage Facilities, Plants.

Enabling Objectives: Know how to store plants properly.

Performance Guide:

1. Identify the kinds of plants that are to be stored
2. Prepare plants for storage according to their particular needs
3. Place plants in storage

DUTY: G. STORE, SHIP, AND TAKE INVENTORY

TASK: 11. Assemble Shipping Cartons

****

Performance Objective: Given materials listed below, assemble shipping cartons.

Standard: Cartons must be symmetrical and sufficiently strong to sustain and protect the floral plants to be shipped in them.

Materials Needed: Unassembled Shipping Cartons, Tape, Stapling Gun.

Enabling Objectives: Know how to use staple gun.

Performance Guide:

1. Arrange all necessary equipment and materials for convenient use in the work area
2. Assemble each carton after unfolding, stapling and taping
3. Check each carton to insure proper assembly
4. Stack cartons in proper storage area
5. Return all unused materials to storage when task is completed

DUTY: G. STORE, SHIP, AND TAKE INVENTORY

TASK: 12. Store Received Supplies

****

Performance Objective: Given materials listed below, store received supplies.

Standard: Completion is realized when the supplies are stored according to a predetermined plan.

Materials Needed: Storage Area, Supplies, Labels, Pen/Pencil.

Enabling Objectives: Be able to write clearly.

Performance Guide:

1. Determine area to be used for storing supplies
2. Select areas within the storage area to be used for storing specific supplies
3. Place supplies in designated areas
4. Label and date supplies when appropriate

DUTY: G. STORE, SHIP, AND TAKE INVENTORY

TASK: 13. Inventory Plants

****

Performance Objective: Given materials listed below, inventory plants.

Standard: All plants must be listed and classified as to variety, and the inventory must be verified.

Materials Needed: Inventory Sheets, Assorted Plants, Pen/Pencil.

Enabling Objectives: Know different varieties of plants.
Be able to write clearly.

Performance Guide:

1. Prepare inventory sheet in advance and place it on a clip board so that it will be ready for use
2. Count and record actual number of plants in each category according to variety, quantity, container size, etc., proceeding systematically
3. Total each category to obtain your final count

DUTY: G. STORE, SHIP, AND TAKE INVENTORY

TASK: 14. Load Trucks and Trailers for Drop Shipment

****

Performance Objective: Given materials listed below, load trucks and trailers for drop shipment.

Standard: Products must be loaded in reverse order and no more than 5% may be rejected because of damage.

Materials Needed: Products to be Shipped, Truck and/or Trailer, Route.

Enabling Objectives: Be able to identify various products.

Performance Guide:

1. Select products to be shipped
2. Group products for predetermined stops on route
3. Load products going to most distant points in front of truck and/or trailer
4. Continue loading groups of products from most distant point to nearest point on route
5. Allow for air circulation if load is to be on truck for more than 24 hours

DUTY: G. STORE, SHIP, AND TAKE INVENTORY

TASK: 15. Conduct Inventory at the End of the Physical Period

****

Performance Objective: Given materials listed below, conduct an inventory at the end of the physical period.

Standard: All merchandise presently in stock must be counted, recorded, and arranged in an orderly manner.

Materials Needed: Merchandise in Stock, Inventory Form, Pen or Pencil.

Enabling Objectives: Must be able to identify all merchandise/equipment.

Performance Guide:

1. Group all similar items together
2. List product name and source
3. List descriptive information
4. Give a count of all items
5. Record product quantity
6. List product wholesale and retail price
7. Determine total dollar units

DUTY: G. STORE, SHIP, AND TAKE INVENTORY

TASK: 16. Store Received Plant Material

****

Performance Objective: Given materials listed below, store all received plant material.

Standard: Moisture and plant quality must be retained.

Materials Needed: Plant Material, Storage Area, Water, Watering Can.

Enabling Objectives: Know the maintenance requirements of different plants.
Know mulching procedures.

Performance Guide:

1. Store balled and burlapped material in a protected area
2. Mulch roots and or soil balls
3. Water all dry material
4. Store bare root stock under high humidity
5. Soak bare root stock in water upon arrival

DUTY: G. STORE, SHIP, AND TAKE INVENTORY

TASK: 17. Store Stock and Supplies

****

Performance Objective: Given materials listed below, store stock and supplies.

Standard: Specified stock and supplies must be organized and stored at specified temperature, humidity, and light conditions according to manufacturer's recommendations. Chemicals must be labeled and stored in locked area with required warning sign.

Materials Needed: Labels, Storage Areas, Stock and Supplies, Locked Area, Warning Signs.

Enabling Objectives: Know the maintenance requirements of plants. Know safety involved in handling chemical products.

Performance Guide:

1. Identify environmental conditions favorable for the storage of specified stock and supplies:
    a. Determine temperature requirements for specified stock and supplies
    b. Determine humidity requirements for specified stock or supplies
    c. Determine if stock or supplies must be protected from sunlight
2. Determine areas to be used for storing specified stock and supplies
3. Select areas within the storage areas to be used for storing specific supplies
4. Place stock and supplies in the designated area for particular item:
    a. Store chemicals in a cool, dry area that is locked and labeled with required warning signs
    b. Store stock and supplies that do not require specified environmental conditions where space allows within the designated storage areas
5. Label and date all chemicals and perishable items
6. Maintain stock room inventory sheet

DUTY: G. STORE, SHIP, AND TAKE INVENTORY

TASK: 18. Receive and Unpack Cut Flowers, Floral Products, and Merchandise

****

Performance Objective: Given materials listed below, receive and unpack cut flowers, floral products, and merchandise.

Standard: All of the boxes must be unpacked without personal injury or damage to the products.

Materials Needed: Cut Packed Flowers, Floral Products, Merchandise, Access to Tools, Band Cutter, Cartons, Hammer, and Nails.

Enabling Objectives: Have knowledge of basic hand tools.
Be able to read invoices.
Know basic math skills.

Performance Guide:

1. Select the proper tool for opening each box:
    a. Band cutter
    b. Box cutter for cardboard cartons (use only box cutters with sharp blades)
    c. Hammer for wooden boxes
2. Open cardboard cartons:
    a. Cut bands from cartons with wire cutters or band cutter
    b. Adjust the box cutter blade to the exact thickness of the cartons to avoid cutting into the merchandise
    Caution: Always cut away from self
    c. If merchandise is in cardboard boxes cut an X in the top of the cardboard carton with the box cutter
    d. Pull the top back and remove the contents
3. Open wooden boxes:
    a. Insert the nail pull end of the hammer or wonder bar under slats of the box and push handle down. Take care to avoid being scratched by nails
    b. Remove the top slats to expose the merchandise
4. Remove packing material from boxes if present
5. Check number of box against invoice before removing merchandise from box

DUTY: G. STORE, SHIP, AND TAKE INVENTORY

TASK: 18. Receive and Unpack Cut Flowers, Floral Products, and Merchandise (Continued)

****

6. Remove merchandise from boxes inspecting each for damage
7. Check count of merchandise with the count reported on invoice
8. Note any shortage or damage on the invoice
9. Break down cardboard cartons
10. Discard boxes, cartons, and packing materials in waste disposal containers
11. Remove all nails, staples, screws, bolts, and packing bands that present hazards and safely discard them
12. Discard wooden boxes in designated container
13. If flowers - match kinds of flowers together and put in piles of 3 or 4 bunches together for each can
14. Select size of cans for the length of flower stems you are working with
15. Fill 1/2 way with water:
    a. If flowers are tight or in bud form use luke warm water, and set them out of refrigerator to open
    b. If flowers are open, use cold water and put in ice box or cooler so they won't open any more
16. Cut ends of each flower stem on a 45 degree angle, and 1" up from end of stem so that flower will drink up more water faster
17. Take string or rubber bands off stems of flowers and take paper or plastic off the heads of flowers
18. Place loose flowers in proper size can and place in the cooler to keep from opening

DUTY: G. STORE, SHIP, AND TAKE INVENTORY

TASK: 19. Keep An Inventory of Plants, Equipment, and Supplies

****

Performance Objective: Given materials listed below, keep an inventory of plants, equipment, and supplies.

Standard: Inventory totals must be 100 percent accurate.

Materials Needed: Inventory Forms, Plants, Equipment, and Supplies.

Enabling Objectives: Must be able to identify plants, materials, and supplies.

Performance Guide:

1. Review carefully the established system of purchasing and supply checkout
2. Revise system for improving efficiency and reducing costs, if possible. Include means for recording items in stack, items checked out, and items purchased
3. Record daily items checked out and items purchased
4. Check items in stock at the end of each week
5. After one month, present inventory totals for comparison.

DUTY: H. MANAGING THE BUSINESS

TASK: 1. Maintain Business Records

****

Performance Objective: Given the materials listed below, maintain business records.

Standard: All business records will be kept neat and up to date.

Materials Needed: Various Business Records, Pen or Pencil, Computer.

Enabling Objectives: Know how to operate computer.
Know how to read and interpret various business records.

Performance Guide:

1. Compile and organize business records used by the agribusiness
2. Review each record to identify needed information and purpose
3. Complete each business record as required
4. File business forms as required
5. If computerized, record information in appropriate file and save on hard or floppy disk. Backup as necessary

DUTY: H. MANAGING THE BUSINESS

TASK: 2. Prepare Financial Statements

****

Performance Objective: Given the materials listed below, prepare financial statements.

Standard: Financial statements will be prepared to determine whether available funds will be sufficient to meet expenses throughout the year.

Materials Needed: Summaries of Financial Statements, Summary of Business Receipts and Expenses.

Enabling Objectives: Know how to read and interpret financial reports.
Have basic math skills.
Read and comprehend written communication and information.

Performance Guide:

1. Select appropriate style and format for financial statements which will best fit the agribusiness needs
2. Assemble information needed to complete the financial statements
3. Review procedures for calculating and recording net worth statements
4. Complete net worth statement identifying current, intermediate, and long-term financial position
5. Review procedures for calculating and recording profit and loss statements
6. Complete profit and loss statements by determining cash sales, capital gains or losses, inventory change, and expenses
7. Review procedures for calculating and recording cash flow statements
8. Complete cash flow statement by determining assets and liabilities for current, intermediate, and fixed resources

DUTY: H. MANAGING THE BUSINESS

TASK: 3. Interpret Financial Statements

****

Performance Objective: Given the materials listed below, interpret financial statements.

Standard: The financial statements of the agribusiness will be interpreted to determine its financial health.

Materials Needed: Summaries of Financial Statements.

Enabling Objectives: Know how to read and interpret financial reports.
Have basic math skills.
Read and comprehend written communication and information.

Performance Guide:

1. Calculate the working capital ratios:
    a. Current ratio - divide total current assets by current liabilities. Rule-of-thumb is a ratio of 1.5 to 2.0 as a minimum to be maintained
    b. Modified quick ratio - cash + merchandise inventory + product inventory + estimated receivables to be collected within 30 days + marketable securities divided by current liabilities due within 30 days. Rule-of-thumb is a ratio of 1.2 to 1.5 as a minimum to be maintained
2. Calculate activity ratios:
    a. Merchandise turnover - divide the annual sales of merchandise by the average monthly inventory of merchandise. When ratio is declining from previous periods, it means that a build-up of inventories is occurring
    b. Net receivables divided by annual sales - indicates the share of the year's sales that remains uncollected. It is an indicator of the credit management program as it compares to previous years
3. Determine standard measures of analyses for efficiency of production using cost of production/unit, volume of business, total business earnings, returns to labor, capital, management, returns to capital and management, and returns to capital

DUTY: H. MANAGING THE BUSINESS

TASK: 4. Complete The Business Loan Application Process

****

Performance Objective: Given the materials listed below, complete the business loan application process.

Standard: A loan application process will be developed which will meet the diverse credit needs of the agribusiness.

Materials Needed: Agricultural Credit Publications, Budget Summary Sheets.

Enabling Objectives: Know how to read and interpret financial reports.
Have basic math skills.
Read and comprehend written communication and information.

Performance Guide:

1. Review sources of credit available from private, cooperative, and governmental channels
2. Review the written records or documents used in lending contracts, such as promissory notes, secured transactions, warehouse receipts, bills of lading, and releases and satisfactions
3. Present prepared financial budget summaries for lender to review
4. Prepare history of past earnings, projected budgets, and cash flows to determine repayment capacity
5. Prepare plan for repayment of loan
6. Prepare statement detailing purpose of loan
7. Determine final provider of lending service
8. Identify security collateral for the loan
9. Negotiate credit

DUTY: H. MANAGING THE BUSINESS

TASK: 5. Develop Credit Plan

****

Performance Objective: Given materials listed below, develop and negotiate a credit plan for the business.

Standard: Instructor must be satisfied that amount of credit is justified and loan repayment is within cash flow ability of the business.

Materials Needed: Credit Publications, Calculator, Cash Flow Statement, Comparative Trend Analysis Sheet, Net Worth Statement, Profit/Loss Statement.

Enabling Objectives: Know how to complete various financial statements.

Performance Guide:

1. Determine need for credit plan for business
2. Complete the following financial statements:
   a. Net Worth Statement
   b. Profit/Loss
   c. Cash Flow Statements
   d. Comparative Standard Analysis Sheet
3. Identify items for which credit will be needed
4. Assess providers of lending services
5. Select provider of lending service
6. Develop credit plan for the business
7. Negotiate credit

DUTY: H. MANAGING THE BUSINESS

TASK: 6. Prepare Budget

****

Performance Objective: Given materials listed below, prepare a budget for the business.

Standard: The budget will show total income, total expenditures and the cash difference without error.

Materials Needed: Current Financial Data to Include Source(s) and Amounts of: Operating Income, Capital Sales, Non-Business Income, Operating Expense, Capital Expenditures, Other Expenditures, Calculator.

Enabling Objectives: Know how to read and interpret business records. Know how to use calculator.

Performance Guide:

NOTE: Include only cash transactions that have occurred

1. Enter source(s) and amounts of operating income
2. Total operating income
3. Enter source(s) and amounts of capital sales
4. Total capital sales
5. Enter source(s) and amounts of non-business income
6. Total non-business income
7. Enter source(s) and amounts of operating expenses
8. Total operating expenses
9. Enter source(s) and amounts of capital expenditures
10. Total capital expenditures
11. Enter source(s) and amounts of other expenditures
12. Total other expenditures
13. Total all income
14. Total all expenditures
15. Calculate each difference between total income and total expenditures

DUTY: H. MANAGING THE BUSINESS

TASK: 7. Prepare Tax Statements

****

Performance Objective: Given materials listed below, completed federal tax schedules, and federal income tax form 1040, complete federal income tax form 1040.

Standard: The completed form must include all income information of the business and the tax due/refund amount must be correct.

Materials Needed: Tax Publications, Calculator, Completed Federal Income Tax Forms and Schedules, Tax Guide, Record Books.

Enabling Objectives: Know how to read and interpret business records.

Performance Objective:

1. Obtain completed federal income tax schedules
2. Transfer bottom line figures from:
    a. income or loss schedule
    b. capital gains or loss schedule
    c. investment credit schedule
    d. FICA schedule
3. Enter "other" income in appropriate boxes
4. Calculate total income and deductions
5. Calculate taxable income
6. Compute tax due (or refund)
7. Record information in correct spaces on tax forms
8. Attach W-2 forms to federal income tax form
9. Send completed tax form to appropriate tax office with supportive materials as required

DUTY: H. MANAGING THE BUSINESS

TASK: 8. Prepare Depreciation Schedule

****

Performance Objective: Given materials listed below, prepare a depreciation schedule.

Standard: Instructor must confirm that calculations and recordings are accurate and reflect the depreciation method most advantageous to the business for the current year.

Materials Needed: Depreciation Publications, Calculator, IRS Income Tax Guide, IRS Publications, Microcomputer, Depreciation Software Programs.

Enabling Objectives: Know how to operate computer and software.
Know different methods of depreciation.

Performance Objective:

1. Define terms in calculating depreciation
2. Determine depreciation records needed for business
3. List available depreciation methods
4. Compare advantages and disadvantages of each method
5. Select most advantageous method
6. Using selected method, calculate and record depreciation
7. Using selected computer software program, calculate and record depreciation

DUTY: H. MANAGING THE BUSINESS

TASK: 9. Calculate Net Worth

****

Performance Objective: Given materials listed below, calculate and record net worth of business.

Standard: Calculations and recordings must measure net worth gain from productivity on a cost basis and net worth at market value.

Materials Needed: Calculator, Complete Business Financial Records, Inventories.

Enabling Objectives: Know how to use calculator.
Know how to read and interpret financial records.

Performance Objective:

1. Assess assets
2. Determine liabilities
3. Determine net worth
4. Record net worth

DUTY: H. MANAGING THE BUSINESS

TASK: 10. Orient New Employees

****

Performance Objective: Given materials listed below, orient new employees.

Standard: Orientation must accurately present all relevant regulations, policies, and responsibilities pertaining to position.

Materials Needed: Business Regulations, Outline of Duties and Tasks Required of the Position.

Enabling Objectives: Know the business policies and regulations.

Performance Objective:

1. Greet the new employees
2. Make introductions
3. Discuss business regulations and employee responsibilities concerning such items as the chain of supervision, completion of time-sheets, maintenance of security, compliance with personnel department's processing procedures, and the receipt of employee benefits
4. Outline specific duties and typical tasks associated with the position
5. Answer any specific questions from new employees

DUTY: H. MANAGING THE BUSINESS

TASK: 11. Plan Work Schedules

****

Performance Objective: Given materials listed below, ability of available labor, labor timetable, tax assignment, and supervision plan, develop employee work schedules.

Standard: The work schedule must provide the labor and time allotment for task performance.

Materials Needed: Calender, Work Record Book.

Enabling Objectives: None.

Performance Objective:

1. Assess amount and ability of available labor
2. Assess times and season for work assignment
    a. Designing arrangements
    b. Taking care of plants
    c. Holidays, vacations, etc.
    d. unplanned absences (emergencies etc.)
3. Assess minimum and maximum labor needs
4. Assign responsibility for work tasks

DUTY: H. MANAGING THE BUSINESS

TASK: 12. Determine Labor Needs

****

Performance Objective: Given materials listed below, assess labor needs, and develop plan for amount of labor needed.

Standard: The plan for labor supply must meet the labor needs of the business.

Materials Needed: Bulletins, Budget Materials, Complete Management Informational Resources, Management Service Publications.

Enabling Objectives: Know how to read and interpret bulletins and publications.

Performance Objective:

1. Assess amount of labor required
2. Assess available labor force
3. Study feasibility of additional mechanization to extend labor supply
4. Study feasibility of altering the business to adjust to labor supply
5. Determine peak work loads
6. Determine labor requirements for the business

DUTY: H. MANAGING THE BUSINESS

TASK: 13. Train Workers Using Demonstration-Performance Method

****

Performance Objective: Given the materials listed below, train workers using the demonstration-performance method.

Standard: Upon completion, the worker must be able to perform each task assigned to the minimum competence specified.

Materials Needed: Description of a Worker's Background and Experience, Itemized Training Required, Agriculture Bulletins, Farmer's Tax Guide, Complete Farm Management Information Resource, Current Agriculture Periodicals and Magazines.

Enabling Objectives: Knowledge of the specific jobs to be performed the employee.

Performance Guide:

1. Assess worker's background and experience
2. Select task for which skill is lacking
3. Demonstrate the task
4. Have worker demonstrate same task
5. Evaluate worker's performance
6. Retrain where needed
7. Repeat procedure for remainder of tasks

DUTY: H. MANAGING THE BUSINESS

TASK: 14. Evaluate Employee Performance

****

Performance Objective: Given materials listed below, evaluate employee performance.

Standard: Evaluation form must be completed, signed by evaluator and employee, and processed and filed according to company's guidelines.

Materials Needed: Employee, Employee's File, Position Description, Employee Evaluation Form.

Enabling Objectives: Know how to fill out an evaluation form.
Know how to recall employee's performance of tasks.
Know how to recall company standards.

Performance Objective:

1. Review employee's file for memos, written warnings, and evidence of continuing education
2. Obtain a company evaluation form
3. Record the tasks that must be performed by the employee on the evaluation form
4. Rate employee's performance of specified tasks according to company's standards:
   a. average
   b. above average
   c. below average
5. Record any comments and recommendations for employee improvement
6. Discuss evaluation with the employee
7. Sign evaluation
8. Request the employee's signature
9. Give the employee a copy of the completed evaluation
10. File a copy of the completed evaluation in the departmental files
11. Submit the completed evaluation to appropriate person/department

DUTY: H. MANAGING THE BUSINESS

TASK: 15. Prepare Reports

****

Performance Objective: Given materials listed below, prepare reports.

Standard: Reports should communicate intended message in a concise style that conforms to standard rules of grammar and spelling.

Materials Needed: Specified Content Information, Established Format.

Enabling Objectives: Know how to spell.
Know how to use proper grammar.

Performance Objective:

1. List the points to be communicated
2. Organize the information to be communicated into paragraphs
3. Write rough draft
4. Edit and revise rough draft
5. Proofread and revise as necessary
6. Present or send report

DUTY: H. MANAGING THE BUSINESS

TASK: 16. Develop Marketing Plan

****

Performance Objective: Given materials listed below, develop a marketing plan.

Standard: The marketing plan developed must yield the highest possible return for the business.

Materials Needed: Marketing Publications, Calculator.

Enabling Objectives: Know how to use a calculator.
Know how to read and interpret marketing publications.

Performance Objective:

1. Assess marketing strategies (futures, etc.)
2. Identify strategies appropriate to business
3. Select appropriate marketing plan
4. Select number of items to be marketed
5. Identify available markets
6. Identify most profitable market
7. Arrange for transportation of items to market

DUTY: H. MANAGING THE BUSINESS

TASK: 17. Maintain Inventory Records

****

Performance Objective: Given the materials listed below, maintain inventory records.

Standard: The inventory record will be adjusted daily for sales of items and purchases of items as they are bought and sold by the agribusiness.

Materials Needed: Perpetual Inventory Summary Sheets, Merchandise/Products in Inventory.

Enabling Objectives: Write Legibly.
Basic knowledge of math skills.

Performance Guide:

1. Obtain and review a copy of a perpetual inventory record sheet
2. Complete the record sheet by entering:
    a. name of item being inventoried
    b. item number
    c. stocking level
3. Record items received by the business during the day on the proper inventory record sheet
4. Record items sold by the business during the day on the proper inventory record sheet
5. Record items removed because of obsolescence which were listed on the inventory sheets
6. Record in the balance column the amount of the item on hand at the end of the business day

DUTY: K. SERVICING AND MAINTAINING EQUIPMENT AND FACILITIES

TASK: 10. Lubricate Moving Parts of Equipment

****

Performance Objective: Given materials listed below, lubricate moving parts of equipment.

Standard: All moving parts needing lubrication must be lubricated.

Materials Needed: Machine with Moving Parts, Grease, Oil, Basic Repair Tools, Grease Gun.

Enabling Objectives: Knowledge of basic hand tools.
Knowledge of lubricants and lubricating equipment.
Knowledge of safety precautions.

Performance Guide:

1. Identify parts to be lubricated
2. Remove parts which hinder access to equipment so that it may be lubricated
3. Remove all soil and grime
4. If there are chains to be lubricated:
    a. Clean chains with solvent if permitted
    b. Select oil
    c. Squirt oil on chain while chain is moving
5. If there are packed bearings:
    a. Select proper grease
    b. Remove bearings
    c. Clean bearings with solvent
    d. Examine bearings for wear
    e. Replace bearings if necessary
    f. Repack bearings
    g. Reinstall bearings
6. If there are grease zerks:
    a. Select proper grease
    b. Clean dirt and excess grease from zerks
    c. Fill zerk with grease
7. Reassemble equipment if needed
8. Clean and store equipment and tools

DUTY: K. SERVICING AND MAINTAINING EQUIPMENT AND FACILITIES

TASK: 9. Service Electrical Outlets and Extensions

****

Performance Objective: Given materials listed below, service electrical outlets and extensions.

Standard: Outlets and/or extensions will operate as designated and safely.

Materials Needed: Basic Hand Tools, Extension Cords, Electrical Supplies.

Enabling Objectives: Knowledge of basic electricity.
Knowledge of basic hand tools.
Knowledge of safety procedures.

Performance Guide:

1. Identify part or item to be replaced or repaired
2. Check current to determine if it is on or off
3. Secure access to do the work
4. Replace worn or broken part
5. Disassemble for repair
6. Repair or replace part
7. Reassemble
8. Check all connections
9. Turn on current and check operation

DUTY: K. SERVICING AND MAINTAINING EQUIPMENT AND FACILITIES

TASK: 8. Clean Work Area

****

Performance Objective: Given materials listed below, clean the work area.

Standard: All tools and containers must be put in storage area and all trash disposed. The work area must be clean. Potting benches must be disinfected.

Materials Needed: Disinfectant, Dirty Work Area, Cleaning Supplies.

Enabling Objectives: Know basic shop safety.

Performance Guide:

1. Select cleaning utensils and supplies
2. Return all hand tools to storage area
3. Move dirty pots, flats, and containers from work area to pot sanitizing area
4. Pick up loose paper, boxes and packing material and deposit in trash containers
5. Sweep work benches and floor
6. Remove any oil or grease which has accumulated on floor or benches
7. Dispose of all trash and debris deposited in the trash containers
8. Clean and disinfect potting benches
9. Mop or hose down the floor
10. Return cleaning utensils and supplies to their storage area

DUTY: K. SERVICING AND MAINTAINING EQUIPMENT AND FACILITIES

TASK: 7. Install Sprinkler Heads, Nozzles, and Other Irrigation Equipment

****

<ins>Performance Objective</ins>: Given materials listed below, install sprinkler heads, nozzles, and other irrigation equipment.

<ins>Standard</ins>: Install sprinkler heads, nozzles, and other equipment to operate properly and according to a specified standard.

<ins>Materials Needed</ins>: Sprinklers, Nozzles, Heads, Irrigation Equipment, Basic Hand Tools, Layout Plans, Specification Standards.

<ins>Enabling Objectives</ins>: Knowledge of irrigation systems.
Knowledge of basic hand tools.
Be able to read plans and specification charts/manuals.

<ins>Performance Guide</ins>:

1. Determine parts or items to be installed
2. Remove existing items if present
3. Follow layout plans if designing a new system
4. Install needed items
5. Check work for leaks or defects
6. Secure tools and replaced parts

DUTY: K. SERVICING AND MAINTAINING EQUIPMENT AND FACILITIES

TASK: 6. Clean Sprayers

****

Performance Objective: Given materials listed below, clean the sprayer.

Standard: All parts must be cleaned of chemical deposits and must be prepared for future use.

Materials Needed: Sprayer Needing Cleaning, Protective Coverings, Safe Location, Water, Detergent, An Emulsifier, Basic Repair Tools.

Enabling Objectives: Know chemical safety.
Know how to use basic hand tools.

Performance Guide:

1. Wear proper protective coverings
2. Determine type of chemical used in sprayer
3. Check label for instructions
4. Drain contents of tank for disposal
5. Place sprayer in safe location for cleaning
6. Flush system and catch rinse water
7. Remove sprayer parts and wash separately
8. Add kerosene, diesel fuel, or emulsifiable spray oil to water for cleaning oil soluble herbicide
9. Circulate mixture through the system
10. Add a strong solution of soapy water to the tank
11. Wash off outside with the soapy solution
12. Clean out all dirt. debris, and/or residue still remaining
13. Flush with clean water
14. Replace sprayer parts
15. Store cleaning equipment

DUTY: K. SERVICING AND MAINTAINING EQUIPMENT AND FACILITIES

TASK: 5. Replace Greenhouse Fan

****

Performance Objective: Given materials listed below, replace greenhouse fan.

Standard: Greenhouse fan will operate properly and safely upon completion.

Materials Needed: Fan, Basic Hand Tools, Fan Specification Standards.

Enabling Objectives: Knowledge of basic electricity.
Know how to use basic hand tools.
Be able to read specifications in repair manual.

Performance Guide:

1. Check for electrical current and turn current off
2. Secure access to greenhouse fan
3. Read and understand fan specifications
4. Disconnect electrical connections from fan motor
5. Disassemble fan from brackets
6. Remove greenhouse fan
7. Secure and connect new fan
8. Check specifications on new fan
9. Connect electrical connections to fan motor
10. Turn current on and check for proper performance
11. Secure and clean basic hand tools

DUTY: K. SERVICING AND MAINTAINING EQUIPMENT AND FACILITIES

TASK: 4. Service Sprinkler Systems by Replacing Valves and Gaskets

****

Performance Objective: Given materials listed below, service sprinkler systems by replacing valves and gaskets.

Standard: Sprinkler will not leak and will perform to maximum specifications.

Materials Needed: Sprinkler System, Gaskets, Valves, Basic Hand Tools, Specification Standards.

Enabling Objectives: Have a knowledge of basic hand tools.
Have a knowledge of sprinkler systems.

Performance Guide:

1. Remove valves from sprinkler system
2. Remove and replace gasket
3. Install new valves if necessary
4. Check system for leaks or defects
5. Secure and clean tools.

DUTY: K. SERVICING AND MAINTAINING EQUIPMENT AND FACILITIES

TASK: 3. Sharpen Hand Tools

****

Performance Objective: Given materials listed below, sharpen hand tools.

Standard: Gaps should be removed from the cutting edge of the tools and the original bevel of the cutting edge must be maintained.

Materials Needed: Hand Tools, Solvent, Cloth, and Tool Sharpener.

Enabling Objectives: Know the safety rules involved.
Know how to use basic hand tools.
Know how to read and determine angles using measuring and gauging devices.

Performance Guide:

1. Use solvent, tool, or other methods required to remove foreign material from tool
2. Clamp tool securely in vise
3. Remove gaps from cutting edge of tools
4. Sharpen tools, maintaining original bevel

DUTY: K. SERVICING AND MAINTAINING EQUIPMENT AND FACILITIES

TASK: 2. Service Small Four-cycle and Two-cycle Engines

****

Performance Objective: Given materials listed below, Service small four-cycle and two-cycle engines.

Standard: Engines will perform according to performance specifications.

Materials Needed: Four or Two-cycle Engine, Oil, Fuel, Filters, Basic Hand Tools.

Enabling Objectives: Know how to use basic hand tools.
Know how to read and use service manuals.
Know the principles of two and four-cycle engines.
Have a knowledge of fuels and lubricants.

Performance Guide:

1. Secure two or four-cycle engine
2. Check service maintenance schedule if available
3. Drain the oil and add new lubricant
4. Remove and replace air and oil filter
5. Check and refuel if necessary
6. Secure and clean basic hand tools

DUTY: K. SERVICING AND MAINTAINING EQUIPMENT AND FACILITIES

TASK: 1. Servicing Business Vehicle

****

Performance Objective: Given materials listed below, service business vehicles.

Standard: Vehicles will perform according to specifications and company usage schedule.

Materials Needed: Business Vehicles, Grease Gun, Grease, Air Filters, Oil Filter Wrench, Oil Filter, Oil, Basic Hand Tools, Water, Fuel.

Enabling Objectives:
Know how to use basic hand tools.
Know the principles of operation of a vehicle.
Know how to read service manuals.
Know safety rules to follow.

Performance Guide:

1. Secure vehicle to be serviced
2. Check service maintenance schedule, if available
3. Drain oil and add new lubricant
4. Remove filters and replace
5. Check cooling system for adequate coolant
6. Check and air tires to proper specifications, if necessary
7. Check fuel and refuel if necessary
8. Secure and clean basic tools

DUTY: J. PERFORM SALES RELATED DUTIES

TASK: 9. Prepare Advertisements

****

Performance Objective: Given materials listed below, prepare advertisements.

Standard: Advertising promotions must be scheduled objectives of the campaign and reach the desired population. Budget restraints, advertising costs, and effectiveness must be used when media selecting media form.

Materials Needed: Advertising Budget, Cost Estimates of Media Forms.

Enabling Objectives: Be able to understand budgeting.

Performance Guide:

1. Determine the customer population that the advertising program is attempting to reach
2. Schedule advertising promotions according to the specified needs of the horticultural business
3. Obtain the annual advertising budget figures
4. Determine specific objectives for particular advertising promotions
5. Determine the media forms most suitable for designated population:
    a. Sign
    b. Radio
    c. Television
    d. Newspaper
    e. Professional journal
    f. Telephone book
6. Select forms of media to use when advertising:
    a. Consider budget restraints
    b. consider cost of media forms
    c. Study effectiveness of each media form
7. Schedule advertising promotions during the time frame that will reach the largest percentage of designated population

DUTY: J. PERFORM SALES RELATED DUTIES

TASK: 8. Maintain Customer File System and Accounts

****

Performance Objective: Given materials listed below, maintain customer file system and accounts.

Standard: Record customer's charge or payment in a file.

Materials Needed: Customer, File Card.

Enabling Objectives: Be able to alphabetize.
Be able to add and subtract dollar amounts.

Performance Guide:

1. Take the customer's name, address, and phone number
2. Check on customer's credit rating
3. Locate ledger card under the customer's last name in the accounts receivable file
4. Record payment or charge made
5. Deduct a payment/add a charge, under amount due column
6. Give customer a receipt for either payment or charge

DUTY: J. PERFORM SALES RELATED DUTIES

TASK: 7. Update Prices on Merchandise

****

Performance Objective: Given materials listed below, update prices on merchandise.

Standard: Update prices on Merchandise.

Materials Needed: Merchandise, Price List, Inventory List.

Enabling Objectives: Be able to read price lists and inventory lists.

Performance Guide:

1. Obtain price list
2. Obtain inventory listing of current products
3. Add items appearing on inventory listing but not on the price list
4. Eliminate items appearing in the price list but not listed in inventory
5. Check price of each item on listing against posted or projected price for the same items
6. correct any inconsistencies, by marking out the old price and adding the current price
7. Reprice shelf items

DUTY: J. PERFORM SALES RELATED DUTIES

TASK: 6. Label and Price Products

****

Performance Objective: Given materials listed below, label and price products.

Standard: Label and price products and plants on display.

Materials Needed: Plants and Products, Labels and Tags, Pen, Labelling Gun.

Enabling Objectives: Be able to identify plants and products.
Be able to write legibly.
Be able to read pricing list.

Performance Guide:

1. Determine what labelling method would be better for product or plant
2. Print common and variety names on labels for plants
3. Price each item
4. Attach label to plant or product so it is visible and secure

DUTY: J. PERFORM SALES RELATED DUTIES

TASK: 5. Gift Wrap Purchases

****

Performance Objective: Given materials listed below, gift wrap purchases.

Standard: The finished packages must exhibit color coordinated wrap, ribbon and bows; wrap must be taped securely fastened to the packages and all packages must be free of smudges.

Materials Needed: Merchandise, Gift Wrap, ribbon, Scissors, Tie-ons, Tissue, Tools and Equipment.

Enabling Objectives: None.

Performance Guide:

1. Assemble tools and supplies at the work area:
    a. Scissors (paper and ribbon)
    b. Cellophane tape
    c. Ribbon
    d. Gift wrap paper
    e. Tie-ons
2. Remove all price tags from the merchandise
3. Place tissue liner in box
4. Place merchandise in gift box and pack tissue around so it won't rattle around and break
5. Cut a piece of wrapping paper so that it will be approximately twice the length of the largest dimension of the box so that it extends over both ends of the box slightly more than half the depth of the box
6. Turn the box upside down and center it over the wrapping paper
7. Pull the sides of the paper over the box and trim the overlap so that it can be turned under approximately one-fourth of an inch
8. Turn the overlap under one-fourth of an inch
9. Tape the overlap with cellophane tape
10. Fold the sides, ends, and the top flap down and the bottom flap up (bottom flap can be turned under to form a neat closure)
11. Tape the bottom flap of the wrapping
12. Tie ribbon around box
13. Tie bow and fasten to box
14. Fasten novelty accessory to package (optional)

DUTY: J. PERFORM SALES RELATED DUTIES

TASK: 4. Process Charge Card Sales Transaction

****

Performance Objective: Given materials listed below, process charge card sales transaction.

Standard: Process a charge card sales transaction.

Materials Needed: Charge Slips, Charge Card Machine, Charge Card, Pen/Pencil.

Enabling Objectives: None.

Performance Guide:

1. Ask the customer whether the sale will be cash or charge
2. Charge card should be identified as one company accepts
3. Follow company rules in accepting charge cards and identifying customers
4. Put charge card and slip into machine to put information onto slip
5. Give card back to customers
6. Fill out written part of charge slip
7. Have customer sign slip
8. Give customer their copy of slip and a receipt
9. Put store copies away properly
10. Thank customer

DUTY: J. PERFORM SALES RELATED DUTIES

TASK: 3. Process Cash Sales Transactions

****

Performance Objective: Given materials listed below, process cash sales transactions.

Standard: Process cash sales transactions.

Materials Needed: Sales Slip, Currencies, Check, Coins.

Enabling Objectives: Be able to count money and read sales amounts.

Performance Guide:

1. Complete sales slip
2. Announce to the customer how much sales amount is
3. Take payment from customer, count it carefully
4. If given exact change, put money in proper place and give customer the receipt
5. If given more than exact amount, lay on top of register (do not put in drawer yet)
6. Count out exact change
7. Count change back to customer and give receipt
8. Place currency into drawer and close cash drawer
9. Thank customer

DUTY: J. PERFORM SALES RELATED DUTIES

TASK: 2. Package Customer Purchase

****

Performance Objective: Given materials listed below, package customer purchase.

Standard: Package the customer purchase carefully.

Materials Needed: Green Floral Tissue, Paper Bags, Flowers, Floral Related Merchandise.

Enabling Objectives: None.

Performance Guide:

For Flowers:

1. Lay out tissue paper (2 sheets)
2. Place flowers on tissue paper and fold paper carefully not to cover flower heads
3. Staple paper closed or use ribbon to tie around center of paper

For Other Materials:

1. Wrap glass items in tissue paper and place carefully in paper bag
2. Place heavier, larger items on bottom of bag
3. For ribbon, cards etc. place in bags suitable to size of items sold

DUTY: J. PERFORM SALES RELATED DUTIES

TASK: 1. Design and Letter Show Cards (Continued)

****

6. Incorporate the following characteristics when lettering the show cards:
    a. Select a style of lettering that will be easy for customers to read
    b. Write copy that if factual, direct and to the point
    c. Avoid including unnecessary words and distracting material
    d. Select lettering colors that will contrast with the show card stock
    e. Select lettering that is visible and in appropriate contrast to background material
    f. Avoid getting ink or paint smears, fingerprints, cuts and tears on the card
    g. Letter in proportionate size to the display
7. Display the show card in a location on the display where it will promote customer interest in the merchandise or service

DUTY: J. PERFORM SALES RELATED DUTIES

TASK: 1. Design and Letter Show Cards

****

Performance Objective: Given materials listed below, design and letter show cards.

Standard: The show card must be well designed, neat, clean and promote customer interest in the merchandise.

Materials Needed: Display and Access to Show Card Lettering Tools and Supplies/Ink or Paint, Ruler, and Pencils.

Enabling Objectives: Be able to measure letters and estimate needed space on poster board.
Be able to spell correctly.
Be able to use a ruler and read measurements.

Performance Guide:

1. Write a plan for the show card including:
    a. The selling features of the item and services
    b. The size and color of the card that is to be used
    c. The style of lettering that is to be used
    d. The copy that is to be lettered on the show card
2. Assemble the tools and materials that will be needed for lettering the show cards at the work area
    a. Lettering ink or paint
    b. Ruler and square
    c. Show card stock
    d. Lettering pens or brushes
    e. Pencils
3. Determine the size of show card that is needed
4. Line off the show card stock with a hard lead pencil
5. Lay out the show card so that it incorporates the principles of design including
    a. Balance
    b. Unity
    c. Harmony
    d. Scale and proportion

DUTY: I. APPLYING SAFETY PRACTICES

TASK: 3. Administer Cardiopulmonary Resuscitation

****

Performance Objective: Given materials listed below, administer cardiopulmonary resuscitation.

Standard: Give CPR and have periodic retraining.

Materials Needed: Person with CPR Skills, Person Needing CPR Assistance.

Enabling Objectives: Must be certified in CPR.

Performance Guide:

1. Do not move the victim unless for safety
2. Make victim comfortable
3. Avoid chilling
4. Try to determine the cause of injury
5. Apply pressure for bleeding
6. Clear obstructed air passages
7. Reassure the victim that everything is going to be ok
8. Identify the victim
9. Loosen constricting clothing
10. Note victim's general appearance

DUTY: I. APPLYING SAFETY PRACTICES

TASK: 2. Use Fire Extinguisher

****

Performance Objective: Given materials listed below, use fire extinguisher.

Standard: Identify correct extinguisher needed and be able to facilitate use.

Materials Needed: Fire Extinguisher, Person from Fire Department to Demonstrate Various Methods and Types.

Enabling Objectives: Know location of fire extinguisher.
Know fire safety procedures.

Performance Guide:

1. Have fireman demonstrate different types of extinguishers and explain uses
2. Give a fire situation
3. Student must choose correct extinguisher
4. Have student verbally demonstrate how extinguisher would be used
5. Follow up with safety precautions

DUTY: I. APPLYING SAFETY PRACTICES

TASK: 1. Apply Basic Emergency First Aid Techniques

****

Performance Objective: Given materials listed below, apply basic emergency first aid techniques.

Standard: Give first aid to the victim so the lasting results of injury is minimized and life is preserved.

Materials Needed: A Cool Head, Blankets, Information on what Happened, Emergency Medical Information, Protect Victim from Unnecessary Manipulation and Disturbance.

Enabling Objectives: Be familiar with basic first aid techniques.

Performance Guide:

1. Do not move the victim unless for safety
2. Make victim comfortable, avoid chilling
3. Try to determine the cause of injury
4. Apply pressure for bleeding
5. Clear obstructed air passages
6. Reassure victim that everything is going to be ok
7. Identify the victim
8. Loosen constricting clothing
9. Note victim's general appearance

DUTY: H. MANAGING THE BUSINESS

TASK: 20. Conduct Inventory of Merchandise

****

Performance Objective: Given the materials listed below, conduct an inventory of merchandise for sale.

Standard: Management personnel will be able to determine what and how much stock is on hand at a given point in time.

Materials Needed: Inventory Sheets.

Enabling Objectives: Know basic math skills.
Be able to identify different types of merchandise offered by the business.

Performance Guide:

1. Close the department to customers
2. Post all daily sales tickets to bring the inventory up to date
3. Clean up the department and place all loose merchandise/products in their proper areas
4. Obtain inventory sheets and review instructions on how to properly complete the forms
5. Print all entries neatly and legibly
6. Do not erase - draw a line through all errors and rewrite
7. Check merchandise for condition. Count only that which is salable. Separate any that are not salable
8. Count and record every item
9. Keep inventories separate for different departments
10. Compute totals and report them to management

DUTY: H. MANAGING THE BUSINESS

TASK: 19. Conduct Periodic Inspection of Merchandise

****

Performance Objective: Given the materials listed below, conduct a periodic inspection of merchandise for sale.

Standard: The merchandise in inventory will be periodically inspected for quality and quantity to permit the agribusiness to effectively merchandise the products and yet keep the quantity small enough to keep overhead costs reasonable.

Materials Needed: Inventory Lists, Stockroom Invoices.

Enabling Objectives: Know basic math skills.
Be able to identify different types of merchandise offered by the business.

Performance Guide:

1. Check count of merchandise received from stockroom:
   a. Read stockroom invoice for quantity, size, color, etc., requested
   b. Check all merchandise received to determine that correct price is recorded
2. Check the condition of the merchandise for damage and make record of inspection date and findings
3. Check inventory levels to determine when and how much to purchase to maintain reasonable inventory levels
4. Record merchandise/products that are not selling and inform appropriate personnel
5. Place orders for merchandise/products enough ahead of time so there will not be a shortage between ordering and delivery
6. Arrange storage area to permit the handling of stock with the least amount of effort and in such a way that stock can be easily found, quantity determined and recorded, and removed if necessary

DUTY: H. MANAGING THE BUSINESS

TASK: 18. Select Computer Software for Records and Reports

****

Performance Objective: Given the materials listed below, select computer software for records and reports.

Standard: Software selected for managing records and reports must be able to analyze the probable consequences of different courses of action.

Materials Needed: Financial Reports, Record Books, List of Computer Software Vendors.

Enabling Objectives: Knowledge of computers.
Basic communications skills.

Performance Guide:

1. Develop an outline describing the agribusiness information system in the areas of:
   a. financial accounting
   b. production records
   c. marketing
   d. financial planning
2. List the jobs the computer will be used for
3. Develop a detailed job description for each application in keeping business records and reports
4. Review software programs used for records and reports which include:
   a. spread-sheet programs
   b. data base management programs
   c. graphics programs
   d. word processing programs
5. List and review the quality of vendors selling software
6. Select software that best matches the computer system to the business needs

DUTY: K. SERVICING AND MAINTAINING EQUIPMENT AND FACILITIES

TASK: 11. Lubricate Chassis of Garden Equipment

****

Performance Objective: Given materials listed below, lubricate chassis of garden equipment.

Standard: All necessary zerks must be filled.

Materials Needed: Garden Equipment Chassis, Basic Repair Tools, Grease Gun, Grease.

Enabling Objectives: Know the principles of operation of garden equipment.
Knowledge of types of lubricants and lubricating equipment.
Knowledge of basic hand tools.

Performance Guide:

1. Identify parts to be lubricated
2. Check owner manual
3. Remove parts which hinder access to equipment so that it may be lubricated
4. Select grease
5. Locate zerks
6. Clean zerks
7. Fill zerks with grease gun
   a. Remove zerks
   b. Clean or replace zerks until grease is accepted
8. Check gear box, if present
   a. Apply proper lubricant
   b. Drain and refill
9. Reassemble equipment
10. Clean and store tools and equipment

DUTY: K. SERVICING AND MAINTAINING EQUIPMENT AND FACILITIES

TASK: 12. Service or Replace Ventilation System

****

Performance Objective: Given materials listed below, service or replace ventilation system.

Standard: System must function efficiently and safely.

Materials Needed: Ventilation System, Basic Hand Tools, Filters, Lubricants, Ventilation System Parts, Cleaning Solvents and Supplies.

Enabling Objectives: Knowledge of basic hand tools.
Knowledge of chemical solvents and lubricant safety.

Performance Guide:

1. Identify parts in need of service
2. Secure access to parts
3. Remove soil and grime
4. Clean with solvents, if necessary
5. Select proper oil or grease if lubrication is necessary
6. Remove parts needed to be replaced or repaired
7. Replace with new part if needed
8. Disassemble and repair worn parts, if needed
9. Reassemble
10. Clean and store equipment and tools

DUTY: K. SERVICING AND MAINTAINING EQUIPMENT AND FACILITIES

TASK: 13. Trouble-Shoot Electrical Wiring and Equipment

****

Performance Objective: Given materials listed below, trouble-shoot electrical wiring and equipment.

Standard: All potential or current electrical problems will be identified and repaired.

Materials Needed: Basic Hand Tools, Voltage/Ampere/Ohm Meter.

Enabling Objectives: Knowledge of basic electricity.
Knowledge of basic hand tools.

Performance Guide:

1. Check current to determine if it is on or off
2. Check all electrical connections
3. Start at source of current and check path to determine if proper voltage, amperage, or ohms are present
4. Determine problem area
5. Repair or replace problem

DUTY: K. SERVICING AND MAINTAINING EQUIPMENT AND FACILITIES

TASK: 14. Calibrate Equipment

****

Performance Objective: Given materials listed below, calibrate equipment at different settings.

Standard: All equipment will perform at the calibrated settings.

Materials Needed: Equipment to be Calibrated, Basic Hand Tools, Calibration Guide.

Enabling Objectives:
Understand basic theory of operation of equipment.
Understand ratio of flow.
Understand basic mathematic skills.
Knowledge of basic hand tools.

Performance Guide:

1. Determine calibration setting or ratio
2. Check equipment for output
3. Adjust or make changes as needed to secure desired ratio
4. Tighten all connections after calibration settings
5. Wear proper safety clothing and equipment if calibrating with chemical products
6. Record calibrated rate for reference

DUTY: K. SERVICING AND MAINTAINING EQUIPMENT AND FACILITIES

TASK: 15. Establish and Maintain Service Records

****

Performance Objective: Given materials listed below, establish and maintain service records.

Standard: All service records must be maintained 100% complete.

Materials Needed: Service Record Forms, List of Work for a Particular Piece of Equipment.

Enabling Objectives: Understand maintenance procedures.

Performance Guide:

1. Secure a list of equipment
2. Secure a list of repair work or maintenance work on all equipment
3. List all work done on a particular piece of equipment on forms
4. Date work performed
5. Establish a maintenance schedule for equipment

DUTY: K. SERVICING AND MAINTAINING EQUIPMENT AND FACILITIES

TASK: 16. Order Repair Parts for Equipment

****

Performance Objective: Given materials listed below, order repair parts for equipment.

Standard: Purchase order must include name of part, part number, quantity, method of shipping, vendor name and address, and authorization.

Materials Needed: Order Forms, Maintenance/Repair Manual, Equipment Part to be Replaced.

Enabling Objectives: Knowledge of equipment parts and parts catalogs.
Know how to fill out purchase requisition/order.
Know how to properly use the phone.

Performance Guide:

1. Identify repair part needed:
    a. Locate repair part in maintenance/repair manual
    b. Contact distributor
2. Complete purchase order:
    a. Name of part
    b. Part number
    c. Quantity needed
    d. Method of shipping
    e. Vendor name and address
3. Obtain authorization for purchase
4. Submit order in person, by mail, or telephone
5. File copy of the order

DUTY: K. SERVICING AND MAINTAINING EQUIPMENT AND FACILITIES

TASK: 17. Perform Routine Maintenance and Repairs

****

Performance Objective: Given materials listed below, perform routine maintenance and repairs.

Standard: Equipment or facilities will function according to their specifications.

Materials Needed: Basic Hand Tools, Equipment or Facilities, Repair Specifications.

Enabling Objectives: Know how to use basic hand tools.
Be able to troubleshoot equipment needs.
Understand equipment usage/operation.

Performance Guide:

1. Identify equipment or facility to be repaired or serviced
2. Become familiar with equipment specifications
3. Identify problem area or needs
4. Perform needed maintenance or service

DUTY: K. SERVICING AND MAINTAINING EQUIPMENT AND FACILITIES

TASK: 18. Prepare Equipment for Off-Season Storage

****

Performance Objective: Given materials listed below, prepare equipment for off-season storage.

Standard: Equipment must be cleaned and serviced properly for storage.

Materials Needed: Equipment to be Stored, Basic Hand Tools, Cleaning Solvents and Supplies, Lubricants.

Enabling Objectives: Know how to use basic hand tools.
Know how to mix and use cleaning solvents.
Understand tune-up procedures and maintenance.

Performance Guide:

1. Clean equipment of debris and grease
2. Drain oil and gasoline from equipment with small engines
3. Clean filters
4. Coat parts with lubricant to prevent corrosion
5. Store under cover in storage racks or in sheds during off season

DUTY: K. SERVICING AND MAINTAINING EQUIPMENT AND FACILITIES

TASK: 19. Clean and Fumigate Storage facility

****

Performance Objective: Given materials listed below, clean and fumigate storage facility.

Standard: Area will be cleaned according to supervisor specifications and will be free of pests and insects.

Materials Needed: Storage Area, Fumigator, Chemical Fumigant, Safety Goggles, Ventilators, Protective Clothing, Cleaning Solvents and Equipment.

Enabling Objectives:
Understand basic shop safety.
Understand chemical safety procedures.
Be able to read and understand labels and instructions for proper use of chemicals.

Performance Guide:

1. Identify area to be cleaned
2. Read labels for safety requirements
3. Wear proper safety protection
4. Clean storage area
5. Prepare for fumigation
6. Fumigate
7. Dispose of chemicals properly
8. Clean fumigation equipment
9. Secure storage area and post signs until area is safe

DUTY: L. PERFORMING GENERAL OFFICE WORK

TASK: 1. Process Telephone Calls

****

Performance Objective: Given the materials listed below, process telephone calls.

Standard: Telephone calls will be processed efficiently with no errors.

Materials Needed: Telephone, Message Pad, Pencil.

Enabling Objectives: Knowledge of telephone etiquette and operation of phone being used.
Be able to write legibly.

Performance Guide:

For Phone Orders:

1. Answer the phone with the business greeting
2. Check with the customer on the product they have in mind
3. Establish time of delivery or pick-up
4. Check on means of payment
5. Make note of the customer's name, credit number, address, directions and phone number on the order
6. Make note of the product description, quantity and price range
7. Repeat the order to the customer for verification
8. Inform customer of delivery charge (if any)
9. Allow the customer to hang up first
10. Initial the order
11. Date the order
12. File the order with orders to be filled the same day

For Transferring Calls:

1. Answer the phone with the business greeting
2. Listen to what the customer wants
3. Explain to the caller why the call is being transferred and to whom
4. Offer to have the party return the call if caller does not want to be transferred
5. Use correct procedures for transferring calls

DUTY: L. PERFORMING GENERAL OFFICE WORK

TASK: 1. Process Telephone Calls (Continued)

****

Answering Calls for Others:

1. Explain co-worker's absence from office without giving out unnecessary information
2. Offer assistance to caller
3. Give approximate time co-worker will return

DUTY: L. PERFORMING GENERAL OFFICE WORK

TASK: 2. File Materials

****

Performance Objective: Given the materials listed below, file materials.

Standard: Materials will be filed in the correct file order with needed information on material.

Materials Needed: Filing System, Records, Reports, File Folders.

Enabling Objectives: Know how to alphabetize and read label and titles to materials.

Performance Guide:

1. Obtain forms required to be filed
2. Find appropriate folder in which to place forms according to:
    a. alphabetical order
    b. invoice numbers
    c. customer names
3. Place form or item in folder neatly without wrinkling papers and in the correct order
4. Replace folder in the correct order in file cabinet

DUTY: L. PERFORMING GENERAL OFFICE WORK

TASK: 3. Process Mail

****

Performance Objective: Given the materials listed below, process mail.

Standard: Incoming mail will be processed and routed to the appropriate person or department. Outgoing mail will be addressed, weighed and stamped with proper postage.

Materials Needed: Mail, Letter Opener, Stamps, Envelopes, Moistener.

Enabling Objectives: Knowledge of postal regulations and options.
Know how to read.
Know about zip coding and updating mailing lists.

Performance Guide:

Incoming Mail

1. Before opening the mail, check for mailing notations that indicate that an item needs special attention
2. Mailgrams, certified and registered mail and items sent special delivery should be delivered to the address immediately
3. Envelopes marked "Personal" or "Confidential" should never be opened by anyone other than the addressee
4. Open envelopes. As you remove the contents, check for enclosures, the signature, the return address and date
5. Incoming mail should be dated as it is received as a reference for the addressee
6. When 2 or more people in the company need to see a particular item, attach a routing slip or stamp
7. A mail register maybe used to record incoming mail that is sent under special services or in a separate package
8. If sorting the incoming mail for supervisor or department, arrange the items in order of priority, with the most important items on top

DUTY: L. PERFORMING GENERAL OFFICE WORK

TASK: 3. Process Mail (Continued)

****

Outgoing Mail

1. To prepare correspondence for the mail, you must have it signed, attach enclosures, fold them, and insert them in the envelope
2. The address on the envelope or mailing label should be typed in all capital letters without any punctuation marks. The last line of the address should contain the city, 2-letter state abbreviation, and the zip code
3. The class of mail, desired special services, and special handling notations should be indicated clearly on outgoing mail
4. A postage meter is more efficient than stamps when applying postage to a large number of pieces of outgoing mail
5. Mailing list should be kept up to date
6. When addresses are typed individually for mailing, typing addresses on strips of gummed labels may be faster than chain-feeding envelopes
7. Special postal rates are available to companies that use 9-digit zip code
8. Mail should be deposited at post office or in a mail deposit box periodically throughout the day

DUTY: L. PERFORMING GENERAL OFFICE WORK

TASK: 4. Maintain Mailing List

****

Performance Objective: Given the materials listed below, maintain mailing list.

Standard: Combine a list of each customers name, address, and phone number.

Materials Needed: Customer Addresses, Pen, File Cards, Mailing Labels.

Enabling Objectives: Write legibly.
Put names in alphabetical order.

Performance Guide:

1. Take customer name, address and phone number
2. Print onto card for reference listings
3. Add any pertinent information concerning customer needs
4. Alphabetize list according to last names
5. Place list in file system

DUTY: L. PERFORMING GENERAL OFFICE WORK

TASK: 5. Schedule Appointments And Meetings

****

Performance Objective: Given the materials listed below, schedule appointments and meetings.

Standard: Schedule appointments and meetings without conflicts and in business-like manner.

Materials Needed: Appointment Book, Pen or Pencil, Calendar.

Enabling Objectives: Proper etiquette.
Read a calendar.

Performance Guide:

1. You should learn supervisor's preference for scheduling appointments, including the people that will be seen and the preferred meeting times
2. Before scheduling an appointment, check the calendar to see that the day and time are available
3. When scheduling an appointment with your supervisor, record the date, time and location; the person's name and telephone number, person's business association or purpose of meeting; and the time required
4. Schedule appointments so that the time between appointments is not wasted
5. If both you and your supervisor schedule and record appointments, coordinate the calendars so that two appointments are not scheduled for the same time
6. When scheduling appointments for your supervisor with another person:
   a. Check the appointment calendars for available times
   b. Telephone or write to request an appointment
   c. Record the appointment on the calendar
7. When the appointment on the calendar is kept on your desk, provide your supervisor with a copy of the day's schedule each morning
8. Notify people of cancellations as soon as you find out about them in order to prevent unnecessary trips and wasted time

DUTY: L. PERFORMING GENERAL OFFICE WORK

TASK: 6. Order Supplies And Equipment

****

Performance Objective: Given the materials listed below, orders supplies and equipment.

Standard: Order replacements items for plants, equipment and supplies.

Materials Needed: Inventory Lists, Supply Catalog, Order Forms, Pen/ Pencil, Calculator.

Enabling Objectives: Knowledge of inventory lists.
Identify plants, equipment and materials.
Ability to read and operate calculator.

Performance Guide:

1. Determine item quantities required
2. Analyze current inventory for item shortages
3. List items to be purchased
   a. Brand name
   b. Item quantities
   c. Potential suppliers
4. Compare item quality and costs with different suppliers
5. Compute purchase costs for items
6. Review purchase costs with superior
7. Order items from suppliers

DUTY: L. PERFORMING GENERAL OFFICE WORK

TASK: 7. Process Incoming Orders

****

Performance Objective: Given the materials listed below, process incoming orders.

Standard: Use a purchase request from a customer, write up the order without error, listing all descriptive information needed for and employee to fill the order.

Materials Needed: Order Form, Customer, Pen/Pencil.

Enabling Objectives: Know customer etiquette.
Be able to write legibly.

Performance Guide:

1. Date the order blank
2. initial the order
3. Write down the customer's name with correct spelling
4. Write down the customer's address with correct spelling
5. Write down the customer's home phone number
6. Note the customer's place of employment and phone number
7. Write down the product name and quantity ordered
8. Check on the time desired and the availability of the merchandise
9. Determine the cost of the order, and any delivery charge
10. Take the customer's payment
11. Make note of the mode of payment
12. Give the customer their receipt with remaining balance listed

DUTY: L. PERFORMING GENERAL OFFICE WORK

TASK: 8. Process Outgoing Deliveries

****

Performance Objective: Given the materials listed below, process outgoing deliveries.

Standard: Arrange for purchased items to be transported without damage and with proper sales receipts.

Materials Needed: Orders To Deliver, Map Or Directions, Sales Receipt Vehicle.

Enabling Objectives: Knowledge of area and map reading skills.
List of delivery schedules.
Knowledge of plant and flower arrangement handling.

Performance Guide:

1. Review list of items purchased
2. Assign task to worker
3. Instruct worker for inspecting and transporting purchased items
    a. Vehicle required for transportation
    b. Route to and from shop
    c. Pick-up point at shop
    d. Examining and separating unhealthy plants
    e. Sales receipts to be obtained
    f. Procedure for loading and unloading plants
4. Inspect transported plants for dehydration, leaf, root or limb damage

DUTY: L. PERFORMING GENERAL OFFICE WORK

TASK: 9. Process Wire Orders

****

Performance Objective: Given the materials listed below, process wire orders.

Standard: Florist must complete the order to and out of town customer in a manner that will satisfy the customer.

Materials Needed: Customer Order Form For Out of Town, State or Country, Order Blank, Phone, Wire Service Book, Sample Book Of Flowers Arrangements.

Enabling Objectives: Ability to write order.
Knowledge of telephone etiquette.
Pricing arrangement list.
Ability to identify flowers or plants.

Performance Guide:

1. Show customer sample book with flower arrangements illustrated
2. Ask the customer what occasion the flowers are for
3. Determine appropriate selection for customer to consider: funeral, anniversary, hospital, weddings, corsages, etc.
4. Discuss cost of arrangement with the customer
5. Take customer's order
   a. Write down customer's name
   b. Write down name and address of recipient
   NOTE: Spelling is very important
6. Write down the number of the arrangement that the customer has ordered or everything the customer wants in his/her arrangement or everything that you tell the customer will be in the arrangement
7. Write down the price that was decided upon-- a service charge must be added to this total (delivery and phone call); and state tax should also be included
8. Write down the message that the customer wants on the card, accuracy is important
9. If cash is paid, collect and mark the order "PAID"

DUTY: L. PERFORMING GENERAL OFFICE WORK

TASK: 9. Process Wire Orders (Continued)

****

10. If a charge is made,
    a. Make sure the account number on the receipt is correct
    b. Check the expiration date--if it is past, card is invalid
    c. Credit check the account number
    d. Have the customer sign the receipt
11. Hand the customer a copy of the receipt
12. Tell the customer the order will be processed
13. Take the order to the wire service book
14. Look up the state and then the town the arrangement will be sent to by alphabetical order
15. Under the town find a florist that can do your order for the price you have. The florists have symbols for fruit, plants, arrangements, dried and silk arrangements, and balloons. After the symbol is the price at which the florists will start their work
16. Call the florist who is to receive the order
17. Tell the florist employee who answers the call:
    a. The name of the wire service being used
    b. The name, state and town of the calling florist
    c. The wire service code number.
    d. A description of the customer's order (or second choice)
    e. The name and address of the recipient (spell uncommon names)
    f. The message of the enclosure card
    g. The delivery date
18. Close the call with your name

DUTY: L. PERFORMING GENERAL OFFICE WORK

TASK: 10. Clean Work Area

****

Performance Objective: Given the materials listed below, clean work area.

Standard: All tools and containers must be put in storage areas and all trash disposed of.

Materials Needed: Cluttered Or Dirty Work Area, Cleaning Supplies.

Enabling Objectives: None.

Performance Guide:

1. Select cleaning utensils and supplies
2. Return all forms and reports to storage areas
3. Pick up loose paper, boxes and packing materials, dispose of in trash containers
4. Sweep floor
5. Return cleaning utensils and supplies to their storage area

DUTY: L. PERFORMING GENERAL OFFICE WORK

TASK: 11. Repair Minor Malfunctions Of Office Equipment

****

Performance Objective: Given the materials listed below, repair minor malfunctions of office equipment.

Standard: All tapes, ribbons or paper will be changed so that equipment will operate correctly.

Materials Needed: Typewriter Ribbon, Paper, Cash Register Tape, Instruction Manual.

Enabling Objectives: Read and follow refilling instructions on all machines.
Knowledge of safety rules regarding electrical equipment.

Performance Guide:

1. With the correct manual read how to change out material on given equipment
2. Follow the directions given in the manual
3. Check to see that equipment is functioning properly with the diagram in the manual
4. If it still does not work properly; check the trouble shooter guide in the manual, or call the repair service

DUTY: M. DESIGNING LANDSCAPES

TASK: 1. Follow a Landscape Plan Installing Plants

****

Performance Objective: Given materials listed below, follow a landscape plan installing plants.

Standard: All materials needed for the plan will be estimated properly.

Materials Needed: Landscape Plan, Calculator, Phone and Phone Book, Instructions on Estimating and Placing of Plants.

Enabling Objectives: Knowledge of costs and spacing of landscape materials.

Performance Guide:

1. Make a plant list from plan and determine cost of plant and installation
2. Estimate materials such as concrete, sand, wood, steel, etc. nonliving elements of the plan
3. Estimate labor costs
4. Determine availability and cost of speciality items such as fountains

DUTY: M. DESIGNING LANDSCAPES

TASK: 2. Set Stones

****

Performance Objective: Given materials listed below, set stones.

Standard: All stones should be installed in a manner that is competitive in todays business.

Materials Needed: Builder's Level, Stones, Sand, Cement Mixer, Reinforcing Iron, Trowel, String Guides, Mortar Joint Tool, Water-Muriatic Solution, Shovel.

Enabling Objectives: Knowledge of skills necessary to construct a stone wall.

Performance Guide:

1. Lay out footing using batter boards and string
2. Dig footing trench to desired depth
3. Set footing level stakes
4. Pour concrete in trench to desired footing level
5. Assemble masonry materials
6. Mix mortar
7. Apply mortar to stones and joints with trowel and set in place using batter string guides
8. Smooth mortar joints with mortar joint tool
9. Clean stones with water-muriatic solution

DUTY: M. DESIGNING LANDSCAPES

TASK: 3. Install Ground Covers

****

Performance Objective: Given materials listed below, install ground covers.

Standard: All cover crop seeds must be sown at recommended rate, date, and depth for particular plant species.

Materials Needed: Cultivation Tool, Site, Seeder, Herbicide, Fertilizer, Cover Crop Seed.

Enabling Objectives: Knowledge of ground covers adaptability to an area.

Performance Guide:

1. Determine type of covercrop to plant:
    a. Consider season of year
    b. Consider climatic zone
    c. Consider soil enrichment factors
    d. Consider cost of seed and applications
2. Prepare site for seeding:
    a. Adjust soil pH
    b. Cultivated soil
    c. Apply herbicide, if recommended
    CAUTION: All manufacturer's recommendations and safety precautions must be observed
    d. Fertilize soil
3. Sow seed following recommended practices for particular plant species
    NOTE: Cover crops are generally drilled or broadcasted
    a. Sow at recommended planting date
    b. Sow at recommended seeding rate and depth

DUTY: M. DESIGNING LANDSCAPES

TASK: 4. Transplant Trees and Shrubs

****

Performance Objective: Given materials listed below, transplant trees and shrubs.

Standard: All trees and shrubs must be reset at their original planting depth. Bare-root trees and shrubs must be set on a mound of soil in a hole large enough for plant roots to be completely outstretched.

Materials Needed: Spade, Tree or Shrub, Planting Site, Starter Fertilizer, Shovel, Wheel Barrow, Anti-transpirant.

Enabling Objectives: Knowledge of varieties suitable for area.
Be able to have a 90% success rate.

Performance Guide:

1. Select tree or shrub that will be transplanted
2. Determine if season and weather conditions are suitable for transplanting trees and shrubs
3. Dig a hole for tree or shrub at the transplanting site:
   NOTE: Keep the topsoil that is removed from hole separated from the subsoil
   a. Make hole approximately twice the size of soil ball for balled and burlapped trees and shrubs
   b. Make hole large enough for roots to be completely out stretched for bare-root trees and shrubs

DUTY: M. DESIGNING LANDSCAPES

TASK: 5. Price Landscape Design

****

Performance Objective: Given materials listed below, price landscape design.

Standard: All bids will be computed so that they will be competitive in todays market.

Materials Needed: Completed Landscape Design Drawing, Pencil, Data on Local Labor Cost, Submit a Price Estimation on the Customer, Product Catalogs, Price Lists, Calculator, Paper.

Enabling Objectives: Knowledge of sources of plant as well as building materials.
Know how to estimate labor costs.

Performance Guide:

1. Complete landscape design
2. Obtain data on local labor costs
3. Obtain data on plant and materials cost

DUTY: M. DESIGNING LANDSCAPES

TASK: 6. Seed Lawns or Sod

****

Performance Objective: Given materials listed below, seed lawns or sod.

Standard: All sod must be laid on prepared and moistened sodbed without long seams or gaps between rolls.

Materials Needed: Sodbed, Roller, Roles of Sod.

Enabling Objectives: Know the techniques of seed or sodding a lawn with minimum or no loss.

Performance Guide:

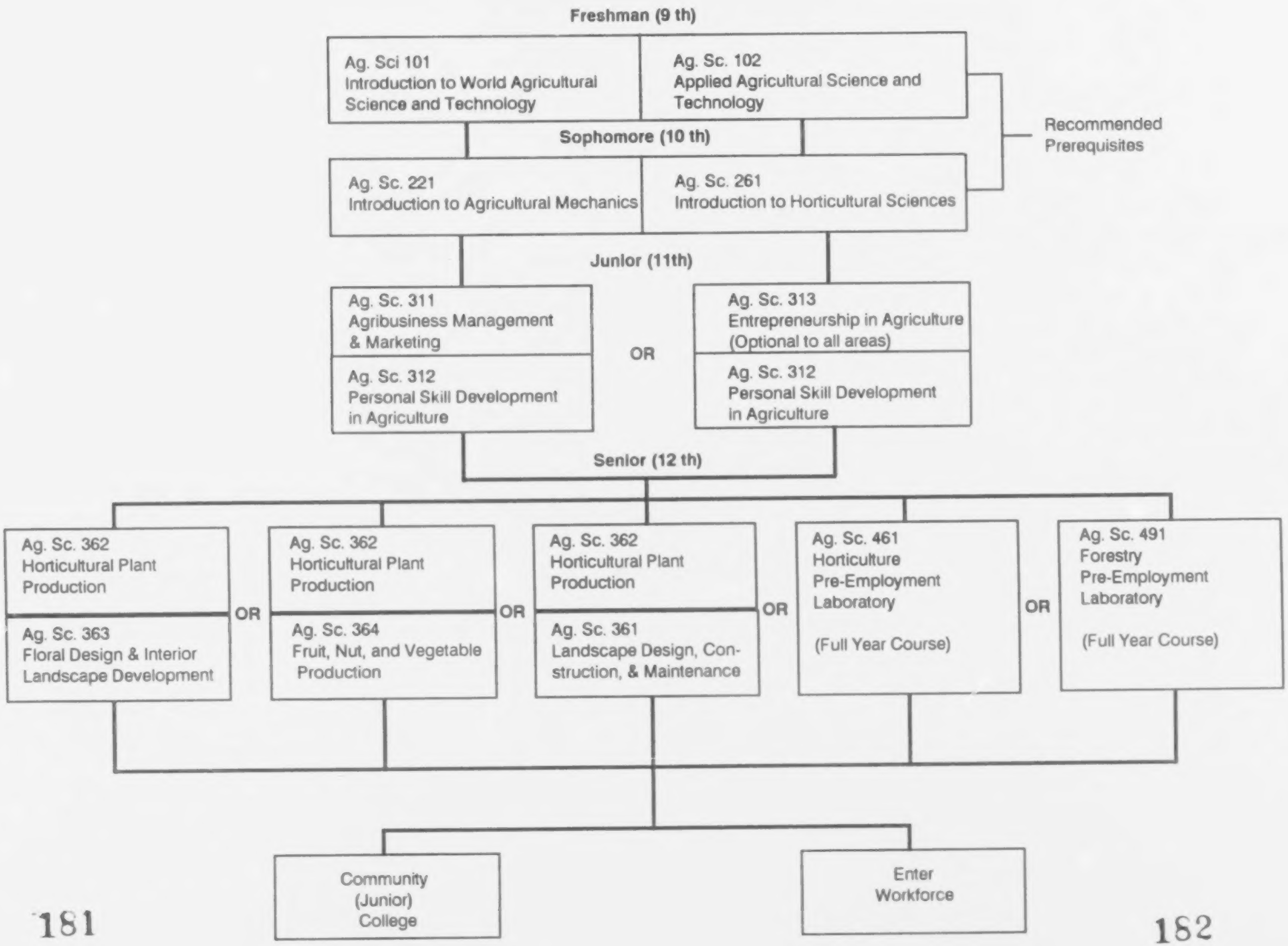
1. Inspect sodbed to insure grading cultivation and fertilizer amendment operations have been completed
2. Irrigate sodbed, if needed
3. Unroll first roll of sod on sodbed
   CAUTION: Avoid stretching the sod to prevent shrinkage
4. Place adjoining rolls of sod so edges fit tightly together

V. RECOMMENDED SECONDARY AND POSTSECONDARY COURSE OPTIONS FLOWCHART

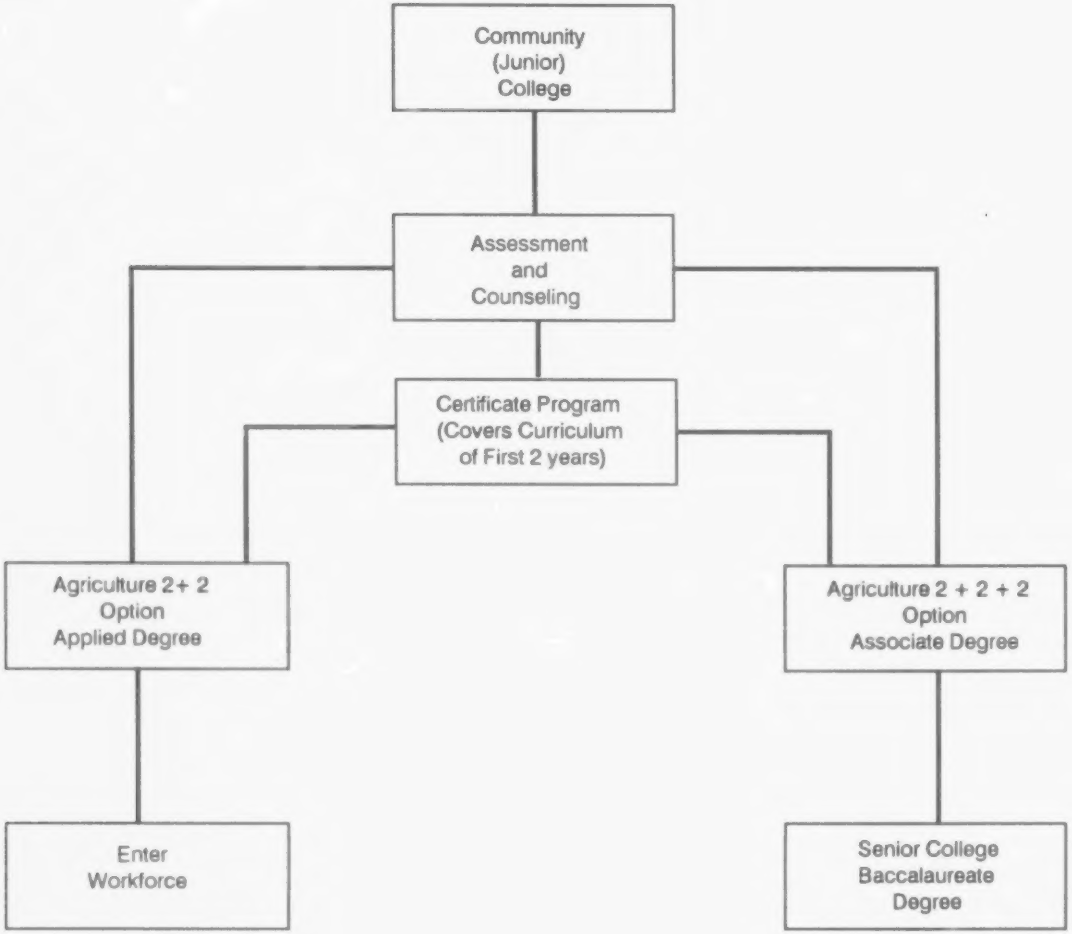
The following flowcharts show the possible courses and routes that a student may take in pursuing a particular 2+2 articulated program.

These charts are examples to be used by other secondary and postsecondary institutions in establishing their own agricultural 2+2 curriculum.

Agriculture 2 + 2 + 2
Horticulture/ Plant Science Option


Freshman (9 th)
Ag. Sci 101
Introduction to World Agricultural Science and Technology
Ag. Sc. 102
Applied Agricultural Science and Technology
Recommended Prerequisites
Sophomore (10 th)
Ag. Sc. 221
Introduction to Agricultural Mechanics
Ag. Sc. 261
Introduction to Horticultural Sciences
Junior (11th)
Ag. Sc. 311
Agribusiness Management & Marketing
Ag. Sc. 312
Personal Skill Development in Agriculture
OR
Ag. Sc. 313
Entrepreneurship in Agriculture (Optional to all areas)
Ag. Sc. 312
Personal Skill Development in Agriculture
Senior (12 th)
Ag. Sc. 362
Horticultural Plant Production
Ag. Sc. 363
Floral Design & Interior Landscape Development
OR
Ag. Sc. 362
Horticultural Plant Production
Ag. Sc. 364
Fruit, Nut, and Vegetable Production
OR
Ag. Sc. 362
Horticultural Plant Production
Ag. Sc. 361
Landscape Design, Construction, & Maintenance
OR
Ag. Sc. 461
Horticulture Pre-Employment Laboratory
(Full Year Course)
OR
Ag. Sc. 491
Forestry Pre-Employment Laboratory
(Full Year Course)
Community (Junior) College
Enter Workforce

Agriculture 2 + 2 + 2
Horticulture/Plant Science Option
Continued


Community (Junior) College
Assessment and Counseling
Certificate Program (Covers Curriculum of First 2 years)
Agriculture 2+ 2 Option Applied Degree
Agriculture 2 + 2 + 2 Option Associate Degree
Enter Workforce
Senior College Baccalaureate Degree

VI. RECOMMENDED STUDENT PREREQUISITES

Secondary:

The following secondary plans include both the academic and agricultural recommendations for a student who is interested in pursuing an articulated 2+2 agricultural program.

Included are the recommended courses beginning with the freshman year and continuing through grade 12. Students on the regular, advanced, or honors tract may follow this plan; however, students on the regular tract must take some higher math and science courses than may be recommended otherwise.

These plans are based upon a seven period day and the only difference in the three is in the area of Physical Education since choosing one of these three options may affect the courses you would have time to take otherwise.

Postsecondary

These postsecondary plans include both the academic and agricultural course recommendations for the associate degree or the applied degree for a student who is interested in continuing the 2+2 agricultural program.

ARTICULATED CURRICULA FOR AGRISCIENCE TECHNOLOGY

High School Horticulture - Garden Center Management Option

	HIGH SCHOOL			
SUBJECT	FRESHMAN	SOPHOMORE	JUNIOR	SENIOR
English	English I Regular or Honors *1	English II Regular or Honors *1	English III Regular or Honors *1	English IV Regular or Honors *1
Mathematics	Algebra I	Geometry	Algebra II	Pre-Calculus Honors *1
Science	Biology I	Physical Science	Chemistry I Regular or Honors *1	
Social Studies	United States History Reg. or Honors *1	World Geography	World History	U.S. Govt. & Free Enterprise
Physical Education	Physical Education / Health	Physical Education		
Agriculture Core	Ag. Sc. 101 Ag. Sc. 102			
Agriculture Core		Ag. Sc. 221 Ag. Sc. 261		
Agriculture Specialty			Ag. Sc. 311 Ag. Sc. 312	Ag. Sc. 461 (Some Schools)
Agriculture Specialty				Ag. Sc. 362 Ag. Sc. 363
Elective	F. A. or Rec. Elective *3	F. A. or Rec. Elective *3	Recommended Elective *4	Recommended Elective *4
Elective			Recommended Elective *4	Computer Elective *2

*1. Students enrolled in the honors program would need to take at least 5 of these courses

*2. Computer course can be selected from the following:
Computer Math
Business Information Processing

*3. Fine Arts Elective can be selected from the following:
(1 credit required for honors and advanced)

Theatre Arts
Introductory Speech
Music History & Literature
Band I-IV (Fall counts for P.E. credit, Spring counts as Fine Arts credit)

*4. Recommended Electives can be selected from the following:

Journalism
Advanced Journalism

Spanish I (Students in honors need to take these
Spanish II *1 courses but regular students may also)

Personal Business Management
Typing I
Record Keeping
Accounting
Advanced Accounting
Introduction to Computer Programming
Psychology
Sociology

ARTICULATED CURRICULA FOR AGRISCIENCE TECHNOLOGY

High School Horticulture - Garden Center Management Option

	HIGH SCHOOL			
SUBJECT	FRESHMAN	SOPHOMORE	JUNIOR	SENIOR
English	English I Regular or Honors *1	English II Regular or Honors *1	English III Regular or Honors *1	English IV Regular or Honors *1
Mathematics	Algebra I	Geometry	Algebra II	Pre-Calculus Honors *1
Science	Biology I	Physical Science	Chemistry I Regular or Honors *1	
Social Studies	United States History Reg. or Honors *1	World Geography	World History	U.S. Govt. & Free Enterprise
Physical Education	Band I	Band II	Band III	Band IV
Agriculture Core	Ag. Sc. 101 Ag. Sc. 102			
Agriculture Core		Ag. Sc. 221 Ag. Sc. 261		
Agriculture Specialty			Ag. Sc. 311 Ag. Sc. 312	Ag. Sc. 461 (Some Schools)
Agriculture Specialty				Ag. Sc. 362 Ag. Sc. 363
Elective	F. A. or Rec. Elective *3	F. A. or Rec. Elective *3	Recommended Elective *4	Recommended Elective *4
Elective	Health		Recommended Elective *4	Computer Elective *2

*1. Students enrolled in the honors program would need to take at least 5 of these courses

*2. Computer course can be selected from the following:
Computer Math
Business Information Processing

*3. Fine Arts Elective can be selected from the following:
(1 credit required for honors and advanced)

Theatre Arts
Introductory Speech
Music History & Literature
Band I-IV (Fall counts for P.E. credit, Spring counts as Fine Arts credit)

*4. Recommended Electives can be selected from the following:

Journalism
Advanced Journalism

Spanish I (Students in honors need to take these
Spanish II *1 courses but regular students may also)

Personal Business Management
Typing I
Record Keeping
Accounting
Advanced Accounting
Introduction to Computer Programming
Psychology
Sociology

ARTICULATED CURRICULA FOR AGRISCIENCE TECHNOLOGY

High School Horticulture - Garden Center Management Option

	HIGH SCHOOL			
SUBJECT	FRESHMAN	SOPHOMORE	JUNIOR	SENIOR
English	English I Regular or Honors *1	English II Regular or Honors *1	English III Regular or Honors *1	English IV Regular or Honors *1
Mathematics	Algebra I	Geometry	Algebra II	Pre-Calculus Honors *1
Science	Biology I	Physical Science	Chemistry I Regular or Honors *1	
Social Studies	United States History Reg. or Honors *1	World Geography	World History	U.S. Govt. & Free Enterprise
Physical Education	Athletics	Athletics	Athletics	Athletics
Agriculture Core	Ag. Sc. 101 Ag. Sc. 102			
Agriculture Core		Ag. Sc. 221 Ag. Sc. 261		
Agriculture Specialty			Ag. Sc. 311 Ag. Sc. 312	Ag. Sc. 461 (Some Schools)
Agriculture Specialty				Ag. Sc. 362 Ag. Sc. 363
Elective	F. A. or Rec. Elective *3	F. A. or Rec. Elective *3	Recommended Elective *4	Recommended Elective *4
Elective	Health		Recommended Elective *4	Computer Elective *2

*1. Students enrolled in the honors program would need to take at least 5 of these courses

*2. Computer course can be selected from the following:
Computer Math
Business Information Processing

*3. Fine Arts Elective can be selected from the following:
(1 credit required for honors and advanced)

Theatre Arts
Introductory Speech
Music History & Literature
Band I-IV (Fall counts for P.E. credit, Spring counts as Fine Arts credit)

*4. Recommended Electives can be selected from the following:

Journalism
Advanced Journalism

Spanish I (Students in honors need to take these
Spanish II *1 courses but regular students may also)

Personal Business Management
Typing I
Record Keeping
Accounting
Advanced Accounting
Introduction to Computer Programming
Psychology
Sociology

ARTICULATED CURRICULA FOR AGRISCIENCE TECHNOLOGY

Palo Alto College Horticultural Technology Option - Associate of Science (Garden Center Management)

SUBJECT	POSTSECONDARY			
	FRESHMAN A	FRESHMAN B	SOPHOMORE A	SOPHOMORE B
English	ENG 1301 3	ENG 1302 3	ENG Lit. Elec. 3	SPE 1305 3
Mathematics	MATH 1310 3	MATH 1314 3		
Science	BIO 1406 4			
Science		CHEM 1401 4		
Social Studies	HIST 1315 3	HIST 1316 3	GOVT 1305 3	GOVT 1306 3
Physical Education			HPER 1	HPER 1
Agriculture Core	AGRI 1101 1		HORT 1312 3	HORT 1307 3
Agriculture Specialty	HORT 2315 3	HORT 2333 3	HORT 2317 3	HORT 2402 4
Agriculture Specialty				
Elective		PHIL 1302 3	CSCI 1306 3	PSY. 1301 3
Total Hours	17	19	16	17

Basic Courses

ENG 1301 - Freshman Composition I
ENG 1302 - Freshman Composition II
ENG 2310, 2313, or 2315 Literature
CSCI 1306 - Computer Literacy
MATH 1310 - College Algebra
MATH 1314 - Calculus for Business
PSY 1301 - Introduction to Psychology
SPE 1305 - Fundamentals of Speech
PHIL 1302 - Logic
HIST 1315 - History of the United States I
HIST 1316 - History of the United States II
GOVT 1305 - Introduction to American Government
GOVT 1306 - Introduction to Texas Government
BIO 1406 - General Botany
CHEM 1401 - General Chemistry I

Agriculture Course Offerings

AGRI 1101 - Introduction to Agriculture
HORT 1307 - Soils and Fertilizers
HORT 1312 - Plant Propagation
HORT 2315 - Plant Identification II - Herbaceous and Exotic Plants
HORT 2317 - Managing Agricultural Businesses
HORT 2333 - Selection and Maintenance of Indoor Plants
HORT 2402 - Pests and Pesticides

ARTICULATED CURRICULA FOR AGRISCIENCE TECHNOLOGY

Palo Alto College Horticultural Technology Option - Associate of Applied Science (Garden Center Management)

	POSTSECONDARY			
SUBJECT	FRESHMAN A	FRESHMAN B	SOPHOMORE A	SOPHOMORE B
English	ENG 1301 3	ENG 1302 3	SPE 1305 3	
Mathematics		MATH 1308 3		BA 2311 3
Agriculture Core	AGRI 1101 1	HORT 2308 3	HORT 2305 3	
Agriculture Core	HORT 2317 3	HORT 1308 3	HORT 2302 3	HORT 2350 3
Agriculture Core	HORT 1307 3	HORT 1312 3	HORT 2315 3	
Management	MGT 1301 3	MGT 1303 3	MGT 2303 3	MGT 2315 3
Art	ART 1301 3			ART 1302 3
Agriculture Specialty				
Agriculture Specialty				
Elective			CSCI 1306 3	PSY 1301 3
Total Hours	16	18	18	15

Basic Courses

ENG 1301 - Freshman Composition I
ENG 1302 - Freshman Composition II
CSCI 1306 - Computer Literacy
MATH 1308 - Math of Finance
PSY 1301 - Introduction to Psychology
SPE 1305 - Fundamentals of Speech
BA 2311 - Principles of Accounting

Agriculture Course Offerings

AGRI 1101 - Introduction to Agriculture
HORT 1307 - Soils and Fertilizers
HORT 1308 - Plant Physiology and Diseases
HORT 1312 - Plant Propagation
HORT 2302 - Pests and Pesticides
HORT 2305 - Fruit and Vegetable Production
HORT 2308 - Greenhouse Crop Production
HORT 2315 - Plant Identification II - Herbaceous and Exotic Plants
HORT 2317 - Managing Agricultural Businesses
HORT 2350 - Horticulture Cooperative training

Management and Art Courses

MGT 1301 - Principles of Management
MGT 1303 - Principles of Supervision
MGT 2303 - Principles of Marketing
MGT 2315 - Small Business Management
ART 1301 - Design I
ART 1302 - Design II

VII. BASIC COURSE OUTLINES

This section includes the basic course outlines for the agriscience courses to be taught at the secondary level and the course outlines for the postsecondary level agriculture courses.

Although this is a 2+2 articulated curriculum, we have included in this section the basic course outlines for the recommended prerequisites also.

SECONDARY COURSE OUTLINES

Agriscience 101- Introduction to World Agricultural Science and Technology

A. Recognize the Importance of Agriculture in the World

1. Understand Supply and Demand of Food and Fiber
2. Identify the Availability of Renewable and Nonrenewable Agricultural Resources
3. Understand the Impact of Agriculture on the World Economy
4. Describe the Interdependency of Agriculture and Other Segments of Society

B. Explain the Historical Significance of Agriculture

1. Identify Key Developments Shaping Modern Agriculture in the World
2. Identify Key Developments Shaping Modern Agriculture in the United States

C. Recognize the Interdependency of Agriculture and World Politics

1. Identify Factors Affecting World Trade
2. Recognize the Impact of Agriculture as a Political Tool

D. Recognize the Interdependency of Agriculture and the Environment

1. Identify Environmental Concerns in Agriculture
2. List Methods of Protecting the Environment
3. Recognize the Impact of the Environment on Agriculture

E. Explain the Food and Fiber System

1. Explain the Food Chain - from Production to Consumption
2. Explain the Fiber Chain - from Production to Usage

F. Identify Research and Development in Agriculture

1. Understand the Impact of Research and Development and Identify Current Developments in Agricultural Science and Technology
2. Apply Research and Development in the Classroom and Laboratory

G. Explore Career and Other Opportunities in Agriculture

1. Conduct a Career Self-Analysis
2. Recognize the Career Decision-Making Process
3. Develop Job Seeking Skills
4. Identify Full-Time Career Opportunities in Agriculture
5. Identify Part-Time Career Opportunities in Agriculture
6. Identify Avocational Opportunities in Agriculture

H. Develop Personal and Social Skills

1. Develop Professionalism and Ethics
2. Use Proper Etiquette and Behavior
3. Explore Personal Relations
4. Practice Good Grooming and Health Habits

I. Improve Communication Skills

1. Understand the Importance of Effective Communication: Speaking
2. Understand the Importance of Effective Communication: Writing
3. Improve Communication Skills Through Organized Activities
4. Utilize the Media for Effective Communication

J. Develop Leadership Skills in Agricultural Science and Technology Through the FFA

1. Develop Life Skills for Effective Leadership
2. Explore Opportunities for Leadership Development Through the FFA
3. Use Democratic Principles in Conducting Effective Meetings
4. Understand the FFA Organization

K. Examine Personal Financial Management

1. Discuss the Importance and Procedures of Keeping Accurate Records
2. Describe the Importance and Use of Budgeting
3. Describe the Importance and Procedures of Personal Finance

L. Analyze Agricultural Experience Programs

1. Identify Various Types of Supervised Agricultural Experience Programs
2. Describe the Characteristics of Successful Supervised Agricultural Experience Programs
3. Select and Plan Individual Supervised Agricultural Experience Programs

Agriscience 102 - Applied Agricultural Science and Technology

A. Identify Soil Formations

1. Recognize the Importance and Formation of Soils
2. Identify Soil Formations

B. Identify the Nature and Properties of Soils

1. Identify Components and Properties of Soils
2. Recognize Soil Classification Systems

C. Explain Basic Plant Science and Technology

1. Describe Plant Structure and Functions of Plant Parts
2. Discuss Plant Growth and Development: Seed Germination
3. Discuss Plant Growth and Development: Production, Storage, and Use of Food in Plants
4. Outline Plant Genetics
5. Outline Plant Reproduction
6. Discuss Plant Breeding
7. Recognize Plants

D. Explain Basic Animal Science and Technology

1. Explain Animal Growth and Development
2. Describe the Anatomy and Physiology of Animals
3. Identify Breeds and Classes of Livestock and Poultry of Economic Importance to the Community
4. Discuss the Importance of Animal Selection
5. Outline Animal Reproduction
6. Outline Animal Genetics
7. Discuss Animal Breeding

E. Determine Basic Food Science Technology

1. Recognize the Importance of Food Science Technology in the World
2. Determine Trends in World Food Production

F. Explore Agricultural Mechanics

1. Identify Major Areas of Agricultural Mechanics
2. Identify Safety and Laboratory Procedures
3. Perform Basic Skills in Agricultural Construction - Tools
4. Identify Lumber and Compute Bill of Materials
5. Identify and Use Fasteners

G. Recognize the Protection of the Environment

1. Determine the Effect of Agricultural Chemicals on the Environment
2. Identify the Requirements for the Proper Use of Agricultural Chemicals
3. Identify Methods of Protecting the Environment

H. Understand Energy and Water Conservation in Agriculture

1. Determine Alternative Energy Sources for Agricultural Use
2. Identify Methods of Conserving Electrical Energy and Combustible Fuels
3. Explain Methods of Conserving Water

I. Explore Career and Other Opportunities in Applied Agricultural Science and Technology

1. Conduct a Career Self-Analysis
2. Identify Career Clusters in Agricultural Science and Technology

J. Understand Experience Programs in Agricultural Science and Technology

1. Identify the Various Types of Supervised Agricultural Experience Programs
2. Describe the Characteristics of Successful Supervised Agricultural Experience Programs
3. Select and Plan Individual Supervised Agricultural Experience Programs

K. Plan and Conduct Leadership Activities in Applied Agricultural Science and Technology

1. Develop Life Skills for Effective Leadership
2. Practice Leadership Skills for Agricultural Science and Technology

Agriscience 221 - Introduction to Agricultural Mechanics

A. Understand and Apply Safe Work Practices That Apply to Agricultural Mechanics

1. Determine the Importance of Agricultural Mechanics
2. Understand and Apply Safety Practices
3. Understand and Apply Laboratory Management Procedures

B. Explore Career Opportunities in Agricultural Mechanics

1. Perform a Career Self-Analysis
2. Evaluate Careers in Agricultural Mechanics
3. Assess Career-Decision Making Factors
4. Conduct Supervised Agricultural Experience Programs Related to Agricultural Mechanics

C. Plan and Conduct Leadership Activities Related to Agricultural Mechanics

1. Participate in Leadership Organizations
2. Develop Life Skills for Effective Citizenship
3. Participate in FFA Degree and Award Activities

D. Identify, Select, and Use Hand Tools, Power Tools, and Measuring and Marking Devices

1. Identify and Use Hand Tools
2. Identify and Use Power Tools
3. Select and Use Measuring and Marking Devices

E. Identify and Perform Basic Electric Wiring Skills

1. Identify Basic Principles of Electricity and Understand Basic Electrical Terminology
2. Perform Basic Electric Wiring Skills

F. Perform Basic Plumbing Skills

1. Install Pipe and Plumbing Fixtures
2. Maintain Water System

G. Apply Basic Concrete Principles

1. Estimate Materials Needed
2. Construct Forms
3. Place, Reinforce, Finish, and Cure Concrete

H. Practice Basic Carpentry Skills

1. Identify Building Materials
2. Plan Cost Effective Construction
3. Apply Construction Techniques

I. Select and Apply Paints and Preservatives

1. Select Materials
2. Apply Brush Painting Techniques
3. Apply Spray Painting Techniques

J. Identify Fencing Methods

1. Select Fencing Materials
2. Plan Fence Construction

K. Perform and Apply Cold Metal Skills

1. Identify Types of Metals
2. Cut, File, Shape, and Drill Metal

L. Perform and Apply Hot Metal Skills

1. Select and Operate Oxy-Fuel Welding and Cutting Equipment
2. Select and Operate Electric Arc Welding Equipment

Agriscience 261 - Introduction to Horticultural Sciences

A. Plan and Conduct Leadership Activities Related to Horticultural Sciences

1. Identify Characteristics and Responsibilities of Leaders and Group Members
2. Recognize Basic Parliamentary Conduct of Orderly Meetings
3. Recognize Responsibility of Committee Membership
4. Discuss Leadership Activities
5. Recognize Citizenship Responsibilities

B. Identify and Discuss Employment Skills Related to Horticultural Sciences

1. Identify Employment Opportunities in Horticulture
2. Recognize Employability Characteristics
3. Discuss Applications and Interviews
4. Discuss Employer-Employee Relations and Employee-Employer Relations
5. Identify Employee Benefits and Payroll Information
6. Review Employer Sponsored Training Programs

C. Examine Entrepreneurship Skills Needed to Establish Businesses Related to Horticultural Sciences

1. Identify Opportunities and Options for Business Ownership
2. Recognize Business Entry-Level Procedures and Planning Processes
3. Recognize the Role of Small Business in the Free Enterprise System

D. Explore Career Opportunities in Horticultural Sciences

1. Identify Careers in the Floriculture Industry
2. Identify Careers in the Nursery Industry
3. Identify Careers in the Turf Grass Industry
4. Identify Careers in the Related Horticultural Areas
5. Identify Careers in the Technical Professions
6. Identify Careers in the Interiorscaping Industry

E. Recognize Safe Work Practices That Apply to Horticultural Sciences

1. Discuss Personal Safety
2. Identify Safety Practices in the Selection, Application, Storage, and Disposal of Chemicals
3. Identify Safety Practices in the Selection, Operation, and Storage of Hand Tools, Small Power Tools, and Large Equipment
4. Discuss Water and Electrical Safety

F. Identify and Recognize Maintenance and Storage of Tools and Equipment Used in Horticultural Sciences

1. Discuss Identification, Maintenance, and Storage of Hand Tools
2. Discuss Identification, Maintenance, and Storage of Small Power Tools
3. Discuss Identification, Maintenance, and Storage of Large Power Equipment

G. Explore Technical Skills Utilized in Horticultural Sciences

1. Discuss Plant Classification and Identification
2. Discuss Horticultural Structures and Equipment
3. Discuss Greenhouse Environment
4. Discuss Plant Growing Components
5. Discuss Plant Growth and Development
6. Discuss Plant Propagation
7. Discuss Growing Plants in Greenhouses and Nurseries for Interior and Exterior Uses
8. Discuss Landscape Establishment and Maintenance
9. Discuss Floral Designing
10. Discuss Vegetable Production
11. Discuss Fruit and Nut Production

Agriscience 311- Agribusiness Management and Marketing

A. Examine Agribusiness Management and its Importance

1. Recognize the Importance of Agriculture
2. Describe the Role and Functions of the Manager
3. Investigate the Process of Management Decision Making
4. Discuss the Value of Setting Goals and Objectives

B. Identify Economic Principles Important to Agribusiness Management

1. Discuss Free Enterprise and Economic Systems
2. Examine Consumer Economics: Supply and Demand
3. Examine Producer Economics: Maximizing Profits

C. Illustrate the Use of Budgeting in Decision Making

1. Categorize Income and Cost of Production
2. Examine the Construction and Analysis of Enterprise Budgets
3. Discuss the Use of Whole Farm Budgeting for Planning
4. Investigate the Use of Partial Budgeting to Analyze Proposed Business Changes

D. Analyze Recordkeeping Procedures

1. List the Parts of a Management Information System
2. Compare Accounting Methods
3. Select an Accounting System
4. Prepare Financial Statements: Balance Sheet, Income Statement, and Cash Flow Statement
5. Analyze the Financial Strength of the Business
6. Review Tax Records and Returns
7. Identify Important Production Records
8. Evaluate Production Records

E. Discuss the Acquisition of Capital Resources

1. Compare Methods of Obtaining Capital Resources
2. Identify the Importance and Types of Credit
3. Determine the Institutions that Provide Agricultural Loans
4. Review Loan Application Forms
5. Compare Methods of Computing Interest
6. Compare Types of Loans

F. Explain Business Related Laws

1. Compare Business Types
2. Interpret Common Agricultural Laws
3. Examine Important Government Regulations
4. Review Common Legal Documents

G. Review Methods of Reducing Risk

1. Identify Risk Management Techniques
2. Identify Types of Insurance Available
3. Discuss Sources of Insurance

H. Examine Government Policy Toward Agriculture

1. Review Past Agricultural Policies
2. Discuss Recent and Future Government Policies Toward Agriculture

I. Study the Marketing of Agricultural Products

1. Discuss the Purpose and Importance of Marketing
2. Discuss the Competitive Environment
3. Discuss Factors that Influence Market Decisions: Foreign and Domestic
4. Compare Types of Agricultural Markets
5. Identify Marketing Alternatives for Production Agriculture
6. Discuss Forward Contracting: Cash and Futures
7. Review the Effects of Government Programs and Regulations

J. Examine the Application of Computers to Agribusiness Management

1. Discuss Appropriate Uses for Computers
2. Utilize Decision Aid Software
3. Utilize Computerized Recordkeeping Systems
4. Identify Guidelines for Selecting a Suitable Computer System

K. Describe the Management of Human Resources

1. Analyze Employee Benefits
2. Describe the Employer/Employee Relationship

L. Explore Career Opportunities in Agribusiness Management

Agriscience 312 - Personal Skill Development in Agriculture

A. Discuss Personal Development

1. Develop a Positive Self Concept
2. Develop Social Skills
3. Project a Professional Image

B. Describe an Effective Leader

1. Determine the Traits of a Good Leader
2. Contrast Leadership Styles

C. Develop Leadership Ability

1. Realize Personal Leadership Potential
2. Understand Basic Human Needs
3. Motivating and Influence People
4. Prepare Resumes and Applications

D. Describe Employee Responsibilities

1. Prepare for Job Interviews
2. Describe Employer Expectations
3. Recognize the Importance of Work Related Ethics
4. Get Along with Co-Workers

E. Describe Employer Responsibilities

1. Evaluate Job Applicants
2. Evaluate Employee Performance
3. Develop an Effective Complaint and Appeals Procedure
4. Recognize Employer Responsibilities
5. Recognize the Importance of Business Related Ethics

F. Develop Communications with Groups and Individuals

1. Improve Written Communications
2. Improve Verbal Communications
3. Improve Non-Verbal Communications
4. Participate in Group Discussions
5. Conduct a Successful Meeting
6. Work with Diverse Groups
7. Remove Barriers to Communication
8. Listen Effectively
9. Make Friends

G. Demonstrate Group and Individual Efficiency

1. Develop a Program of Work
2. Organize Groups
3. Establish Personal Goals
4. Manage Time
5. Make Decisions
6. Solve Problems

Agriscience 361 - Landscape Design, Construction, and Maintenance

A. Analyze Landscape Sites to Facilitate Landscape Design, Construction, and Maintenance

1. Assess Soil Characteristics
2. Evaluate Environmental Conditions
3. Complete a Site Analysis Check List
4. Sketch the Site

B. Prepare Landscape Plans to Facilitate Landscape Design, Construction, and Maintenance

1. Select Drawing Equipment
2. Utilize Principles of Design: Balance, Simplicity, Proportion, Contrast, Repetition, Variety, and Sequence
3. Utilize Computer Assisted Design
4. Blueprint/Sketch the Landscape Plan

C. Recognize Plants Used in Landscape Design, Construction, and Maintenance

1. Classify Landscape Plants
2. Identify Landscape Plants
3. Grade Landscape Plants
4. Identify Sources of Plants

D. Identify Structures Used in Landscape Design, Construction, and Maintenance

1. Identify Landscape Structures
2. Identify Sources of Landscape Structures

E. Evaluate Service Contracts Related to Landscape Design, Construction, and Maintenance

1. Schedule Landscape Services
2. Prepare Bids
3. Prepare Contracts

F. Recognize Safe Work Practices That Apply to Landscape Design, Construction, and Maintenance

1. Recognize Personal Safety Measures
2. Use Safety Practices in Selecting, Applying, Storing, and Disposing of Chemicals
3. Use Safety Practices in Selecting, Operating, and Storing Hand Tools, Small Power Tools, and Large Equipment

G. Identify and Recognize Maintenance and Storage of Tools and Equipment Used in Landscape Design, Construction, and Maintenance

1. Identify, Maintain, and Store Hand Tools
2. Identify, Maintain, and Store Small Hand Tools
3. Identify, Maintain, and Store Large Power Equipment

H. Examine Landscape Installation Principles Related to Landscape Design, Construction, and Maintenance

1. Prepare and Plant Growing Site
2. Install Landscape Plants
3. Install Turf
4. Install Landscape Structures

I. Recognize Maintenance Principles of Landscape Design, Construction, and Maintenance

1. Fertilize Plants
2. Water Plants
3. Manage Pests of Plants
4. Prune and Manicure Plants

J. Review Management Records Related to Landscape Design, Construction, and Maintenance

1. Schedule Landscape Maintenance
2. Maintain Records of Landscape Services
3. Analyze Records of Landscape Services
4. Assess Landscape Services

K. Explore Career Opportunities in Landscape Design, Construction, and Maintenance

1. Perform a Career Self-Analysis
2. Evaluate Careers in Landscaping
3. Assess Career Decision-Making Factors

L. Plan and Conduct Leadership Activities Related to Landscape Design, Construction, and Maintenance

1. Participate in FFA Chapter Activities
2. Participate in Professional Organizations Related to Landscaping
3. Prepare FFA Award and Degree Applications

Agriscience 362 - Horticultural Plant Production

A. Classify and Identify Plants Used in Horticultural Plant Production

1. Identify Advantages of Naming Plants Scientifically
2. Recognize Plant Characteristics Utilized to Classify and Name Plants
3. Recognize Plant Characteristics Utilized to Identify Plants
4. Classify Greenhouse/Nursery Plants
5. Identify Greenhouse/Nursery Plants

B. Recognize Safe Work Practices That Apply to Horticultural Plant Production

1. Recognize Personal Safety Measures
2. Use Safety Practices in Selecting, Applying, Storing, and Disposing of Chemicals
3. Use Safety Practices in Selecting, Operating, and Storing Hand Tools, Small Power Tools, and Large Equipment

C. Identify and Recognize Maintenance and Storage of Tools and Equipment Used in Horticultural Plant Production

1. Identify, Maintain, and Store Hand Tools
2. Identify, Maintain, and Store Small Power Tools
3. Identify, Maintain, and Store Large Power Equipment

D. Recognize Plant Propagation Techniques Related to Horticultural Plant Production

1. Identify Basic Structural Plant Parts
2. Recognize the Basic Functions of Structural Parts of Plants
3. Differentiate Between Monocot and Dicot Seeds
4. Differentiate Between Male and Female Flower Parts
5. Germinate Seeds
6. Plant Seeds in Containers or Seedbeds
7. Recognize Advantages of Asexual Propagation
8. Propagate Plants Asexually

E. Recognize Plant Growing Principles Related to Horticultural Plant Production

1. Select Plant Growing Media Materials
2. Prepare Plant Growing Media Mixtures Using Selected Materials
3. Prepare Mulches and Composts
4. Sterilize Plant Growing Media
5. Select Greenhouse/Nursery Plants
6. Plant Greenhouse/Nursery Plants
7. Apply Fertilizers
8. Water Plants
9. Manage Plant Pests

F. Review Marketing Techniques Related to Horticultural Plant Production

1. Schedule Greenhouse/Nursery Plant Production Cycles
2. Inventory Greenhouse/Nursery Plant Stock
3. Store Greenhouse/Nursery Plant Stock
4. Transport Greenhouse/Nursery Plant Stock
5. Sell Greenhouse/Nursery Plant Stock

G. Identify and Recognize Maintenance of Structures and Equipment Used in Horticultural Plant Production

1. Recognize Considerations for Locating and Building a Greenhouse/Nursery
2. Select Structures Used for Propagating and Growing Greenhouse/Nursery Plants
3. Select Equipment Required to Control Environmental Conditions of Greenhouse/Nursery Plants
4. Select Equipment and Supplies for Propagating and Growing Greenhouse/Nursery Plants
5. Maintain Structures and Equipment
6. Maintain Environmental Control Devices

H. Discuss Management of Environmental Conditions Related to Horticultural Plant Production

1. Recognize Environmental Requirements for Greenhouse/Nursery Plants
2. Control Greenhouse Temperature
3. Control Greenhouse Humidity
4. Modify Nursery Plant Humidity
5. Control Greenhouse Ventilation
6. Control Greenhouse Light
7. Shade Nursery Plants

I. Review Management Records of Enterprises Related to Horticultural Plant Production

1. Evaluate Recordkeeping Systems for Horticultural Plant Production Enterprises
2. Maintain Records of Horticultural Plant Production Enterprises
3. Analyze Records of Horticultural Plant Production Enterprises
4. Assess Horticultural Plant Production Enterprises

J. Explore Career Opportunities in Horticultural Plant Production

1. Perform a Career Self-Analysis
2. Evaluate Careers in Horticultural Plant Production
3. Assess Career Decision-Making Factors

K. Plan and Conduct Leadership Activities Related to Horticultural Plant Production

1. Participate in FFA Chapter Activities
2. Participate in Professional Organizations Related to Horticultural Plant Production
3. Prepare FFA Award and Degree Applications

Agriscience 363 - Floral Design and Interior Landscape Development

A. Classify and Identify Flowers and Plants Used in Floral Design

1. Classify Flowers and Plants as to Appearance, Seasonality, and Use
2. Identify Cut Flowers
3. Identify Interior Foliage Plants
4. Identify Interior Blooming Plants
5. Identify Cut Foliage

B. Review Techniques of Increasing Keeping Qualities of Flowers and Plants Used in Floral Design

1. Use Preservatives for Cut Flowers and Cut Foliage
2. Store Interior Flowers and Plants at the Proper Environmental Conditions
3. Cut Stems Properly

C. Trace the History of Floral Design

1. Recognize Oriental Influences of Floral Design
2. Review European Heritage of Floral Design
3. Identify Modern Uses of Floral Design in the United States

D. Recognize Design Principles Related to Floral Design

1. Use Balance in Floral Design
2. Use Proportion in Floral Design
3. Use Rhythm in Floral Design
4. Use Focalization in Floral Design
5. Sketch Geometric Floral Designs
6. Recognize Color Harmony in Floral Design

E. Evaluate Geometric Floral Designs Prepared with Fresh Cut Flowers Related to Floral Design

1. Review Geometric Floral Design Mechanics
2. Select Materials and Containers for Preparing Geometric Floral Designs with Fresh Cut Flowers
3. Prepare Symmetrical Arrangements with Fresh Cut Flowers
4. Prepare Asymmetrical Arrangements with Fresh Cut Flowers
5. Prepare Round Arrangements with Fresh Cut Flowers

F. Evaluate Geometric Floral Designs Prepared with Silk Flowers and Dry Flowers Related to Floral Design

1. Review Geometric Floral Design Mechanics
2. Select Materials and Containers for Preparing Geometric Floral Designs with Silk Flowers and Dry Flowers
3. Prepare Two-Dimensional Pressed Flower Pictures with Silk Flowers and Dry Flowers
4. Prepare Three-Dimensional Arrangements with Silk Flowers and Dry Flowers

G. Recognize Techniques of Preparing Corsages and Boutonnieres Related to Floral Design

1. Select Flowers, Foliage, and Materials for Preparing Corsages and Boutonnieres
2. Identify Crescent, Vertical, and Round Designs for Corsages and Boutonnieres
3. Wire Flowers
4. Construct Bows
5. Prepare Football Chrysanthemum Corsages, Boutonnieres, and Carnation Corsages

H. Recognize Techniques of Preparing Designs for Holidays, Banquets, and Other Occasions Related to Floral Design

1. Identify Flower Uses for Holidays and Seasonal Occasions
2. Design Floral Arrangements for Holidays and Seasonal Occasions
3. Prepare Floral Designs for Banquets
4. Prepare Floral Designs for Weddings, Funerals, and Churches

I. Recognize Safe Work Practices That Apply to Floral Design and Interior Landscaping

1. Identify Poisonous Plants
2. Practice Safety in Using Tools
3. Practice Safety in Using Chemicals

J. Classify and Identify Tropical Foliage Plants and Blooming Plants Used in Interior Landscape Development

1. Classify Tropical Foliage Plants and Blooming Plants as to Appearance, Seasonality and Use
2. Identify Tropical Foliage Plants and Blooming Plants

K. Discuss Proper Handling Techniques for Tropical Foliage plants and Blooming Plants Used in Interior Landscape Development

1. Manage Quality, Intensity, and Duration of Environmental Conditions for Tropical Foliage plants and Blooming Plants
2. Fertilize and Water Tropical Foliage Plants and Blooming Plants
3. Manage Pests of Tropical Foliage Plants and Blooming Plants
4. Prune Tropical Foliage Plants and Blooming Plants

L. Recognize Principles of Design Applied to Interior Landscaping

1. Use Balance in Interior Landscaping
2. Use Proportion in Interior Landscaping
3. Use Rhythm in Interior Landscaping
4. Use Focalization in Interior Landscaping
5. Assess Color, Form, and Texture of Designs

M. Evaluate Designs of Commercial Clients Related to Interior Landscape Development

1. Design Interior Landscapes for Commercial Mall Sites
2. Design Interior Landscapes for Small Commercial Clients

N. Evaluate Service Contracts Related to Interior Landscape Development

1. Schedule Interiorscaping Services
2. Prepare Bids for Interiorscaping Services
3. Prepare Interiorscaping Contracts

O. Explore Career Opportunities in Floral Design and Interior Landscape Development

1. Perform a Career Self-Analysis
2. Evaluate Careers in Floral Design and Interior Landscape Development
3. Assess Career-Decision Making Factors

P. Plan and Conduct Leadership Activities Related to Floral Design and Interior Landscape Development

1. Participate in FFA Chapter Activities
2. Participate in Professional Organizations Related to Floral Design and Interior Landscape Development
3. Prepare FFA Award and Degree Applications

Agriscience 364 - Fruit, Nut, and Vegetable Production

A. Identify Plants Used in Fruit, Nut, and Vegetable Production

1. Identify Fruit Trees
2. Select Cultivars of Fruit Trees
3. Identify Nut Trees
4. Select Cultivars of Nut Trees
5. Identify Small Fruits
6. Select Cultivars of Small Fruit
7. Identify Vegetables
8. Select Cultivars of Vegetables

B. Evaluate Plant Production Enterprises and Cropping Systems Related to Fruit, Nut, and Vegetable Production

1. Evaluate Fruit Production Enterprises
2. Evaluate Nut Production Enterprises
3. Evaluate Vegetable Production Enterprises
4. Compare Cropping Systems

C. Recognize Management of Soil and Nutrients Related to Fruit, Nut, and Vegetable Production

1. Identify Soil Requirements
2. Calculate Nutrient Requirements
3. Select Soil Testing Methods and Procedures
4. Use Soil Test Results
5. Select Inorganic and Organic Fertilizers
6. Determine Methods, Rates, and Time of Fertilizer Application and Recognize Fertilizer Regulations

D. Recognize Safe Work Practices That Apply to Fruit, Nut, and Vegetable Production

1. Recognize Personal Safety Measures
2. Use Safety Practices in Selecting, Applying, Storing, and Disposing of Chemicals
3. Use Safety Practices in Selecting, Operating, Maintaining, and Storing Hand Tools, Small Power Tools, and Large Equipment

E. Identify and Recognize Control Practices of Plant Pests Related to Fruit, Nut, and Vegetable Production

1. Identify Pests of Fruits, Nuts, and Vegetables
2. Manage Pests of Fruits, Nuts, and Vegetables
3. Apply Agricultural Chemicals Safely

F. Recognize Weed Control Practices Related to Fruit, Nut, and Vegetable Production

1. Control Weeds with Mechanical Practices
2. Control Weeds with Chemicals
3. Control Weeds with Biological Practices

G. Recognize Plant Propagation Techniques Related to Fruit, Nut, and Vegetable Production

1. Propagate Fruit Trees
2. Propagate Nut Trees
3. Propagate Small Fruits
4. Propagate Vegetables

H. Recognize Plant Growing Principles Related to Fruit, Nut, and Vegetable Production

1. Prepare Plant Growing Media Materials
2. Prepare Mulches and Compost
3. Sterilize Plant Growing Media
4. Select Plants
5. Plant Trees, Vines, and Vegetables
6. Apply Fertilizers
7. Water Plants
8. Construct Plant Growing Structures

I. Identify Plant Pruning Techniques Related to Fruit, Nut, and Vegetable Production

1. Prune Fruit Trees
2. Prune Nut Trees
3. Prune Small Fruits
4. Prune Vegetables

J. Evaluate Harvesting, Grading, Packing, Storing, and Marketing of Plants Related to Fruit, Nut, and Vegetable Production

1. Harvest Fruit, Nuts, and Vegetables
2. Grade Fruit, Nuts, and Vegetables
3. Pack Fruit, Nuts, and Vegetables
4. Store Fruit, Nuts, and Vegetables
5. Market Fruit, Nuts, and Vegetables

K. Review Management Records of Enterprises Related to Fruit, Nut, and Vegetable Production

1. Evaluate Recordkeeping Systems for Fruit, Nut, and Vegetable Production Enterprises
2. Maintain Records of Fruit, Nut, and Vegetable Production Enterprises
3. Analyze Records of Fruit, Nut, and Vegetable Production Enterprises
4. Assess Fruit, Nut, and Vegetable Production Enterprises

L. Explore Career Opportunities in Fruit, Nut, and Vegetable Production

1. Perform a Career Self-Analysis
2. Evaluate Careers in Fruit, Nut, and Vegetable Production
3. Assess Career-Decision Making Factors

M. Plan and Conduct Leadership Activities Related to Fruit, Nut, and Vegetable Production

1. Participate in FFA Chapter Activities
2. Participate in Professional Organizations Related to Fruit, Nut, and Vegetable Production
3. Prepare FFA Award and Degree Applications

Agriscience 461 - Pre-Employment Laboratory in Horticulture

A. Opportunities in Horticultural Occupations

1. Employment Opportunities and Occupational Requirements
2. Choosing An Occupation
3. Finding a Job and Preparing for an Interview
4. Employee-Employee and Employee-Employer Relations
5. Employee Benefits and Payroll Information

B. Plant Classification and Identification

1. Greenhouse Plant Classification
2. Greenhouse, Ornamental, and Nursery Plant Identification
3. Bud, Stem, Leaf, Flower, and Fruit Characteristics

C. Structures and Equipment Used in Producing Greenhouse, Ornamental, and Nursery Plants

1. Structures Used in Producing Plants
2. Greenhouse Parts and Coverings
3. Greenhouse and Nursery Equipment
4. Determining Location, Size, and Arrangement of a Greenhouse

D. Greenhouse Environment

1. Greenhouse Environment
2. Watering and Feeding Greenhouse Plants

E. Soil and Plant Growth and Development

1. Propagation Media
2. Nursery Soils
3. Compost, Mulches, and Soil Mixtures
4. Soil Sterilization
5. Fertilizers
6. Plant Growth and Development

F. Propagation of Plants

1. Sexual Propagation of Greenhouse, Ornamental, and Nursery Plants
2. Asexual Propagation and Growth Regulators
3. Propagating Plants by Cuttings
4. Propagating Plants by Layering, Separation, and Division
5. Propagating Plants by Grafting
6. Propagating Plants by Budding
7. Plant Selection and Breeding
8. Reproduction Cycle of Plants

G. Growing Greenhouse Plants

   1. Cut Flower Production
   2. Pot Flower Production
   3. Bedding Plant Production
   4. Outdoor Foliage Plant Production
   5. Indoor Foliage Plant Production
   6. Growing Plants for Totem Poles
   7. Growing Plants for Terrariums and Bottle Gardens and Preparing Them
   8. Growing Succulents

H. Nursery Plant Production

   1. Growing Nursery Stock
   2. Growing Ornamentals in Containers

I. Developing and Maintaining the Landscape

   1. Grades and Standards for Landscape Plants
   2. Landscape Planning
   3. Preparing the Landscape Plan
   4. Maintaining the Landscape

J. Establishing and Caring for Turf

   1. Turf Grasses of Texas
   2. Establishing a New Turf
   3. Managing an Established Turf
   4. Turf Problems

K. Soil and Plant Diseases, Insects, Organisms, and Weeds

   1. The Safe Use of Chemicals in Controlling Diseases, Insects, Organisms, and Weeds
   2. Identification and Control of Plant Insects
   3. Identification and Control of Plant Diseases

L. Floral Arrangements

   1. Floral Design Accessories
   2. Arranging Floral Baskets, Vases, and Miscellaneous Tributes
   3. Judging Floral Arrangements

M. Greenhouse and Nursery Business Management

   1. Calculating Production Costs
   2. Labeling, Pricing, Displaying, and Advertising
   3. Financial Control, Credit, Records, and Accounts
   4. Marketing

N. Operating and Maintaining Horticultural Equipment

  1. Personal Safety
  2. Selecting and Maintaining Horticultural Hand Tools
  3. Operating and Maintaining Small Power Equipment
  4. Operating and Maintaining Tractors and Other Large Equipment

O. Vegetable Production

  1. Home Gardening
  2. Commercial Gardening

P. Fruit and Nut Production

  1. Home Orchards
  2. Commercial Orchards

Q. Agricultural Leadership

  1. The Future Farmers of America
  2. Parliamentary Procedure

POSTSECONDARY COURSE OUTLINES

AGRICULTURE 2 + 2 + 2
Garden Center Management Option
Palo Alto College

Agriculture 2 + 2 Option Applied Degree

- AGRI 1101 Introduction to Agriculture
- HORT 1307 Soils and Fertilizers
- HORT 1308 Plant Physiology and Diseases
- HORT 1312 Plant Propagation
- HORT 2302 Pests and Pesticides
- HORT 2305 Fruit and Vegetable Production
- *HORT 2308 Greenhouse Crop Production
- HORT 2315 Plant Identification II
- HORT 2317 Managing Agricultural Businesses
- HORT 2350 Horticulture Cooperative Training

Certificate Program (Covers Curriculum of First Two Years)

- AGRI 1301 Agriculture Economics
- HORT 1305 General Horticulture
- HORT 1314 Plant Identification I

Agriculture 2 + 2 + 2 Option Associate Degree

- AGRI 1101 Introduction to Agriculture
- HORT 1307 Soils and Fertilizers
- HORT 1312 Plant Propagation
- HORT 2315 Plant Identification II
- HORT 2317 Managing Agricultural Businesses
- *HORT 2333 Selection and Maintenance of Indoor Plants
- HORT 2402 Pests and Pesticides

* The course outlines for these courses have not been developed at this time.

Agriculture 1101
Introduction to Agriculture

Course Objective

Upon the successful completion of this course, the student will:

1. Be able to make an intelligent decision in the choice of an agricultural career.
2. Be familiar with the different career opportunities in agriculture.
3. Be familiar with the importance of agriculture to the global economy.

Outline

I. Importance of Agriculture to the State, Nation, and World

II. Career Opportunities in Animal Science

III. Career Opportunities in Natural Resources

IV. Career Opportunities in Agribusiness

V. Career Opportunities in Plant Science/Horticulture

VI. Career Opportunities in Government

VII. Scientific Agricultural Careers

VIII. Career Opportunities in Agricultural Mechanics

IX. The New Fields of Agriculture

X. Agriculture in the World Economy

XI. Agriculture's Future

Horticulture 1307
Soils and Fertilizers

Course Objectives

Upon the successful completion of this course, the student will:

1. Be able to define soil, it's origin and it's relationship to the landscape and as a medium for plant growth.
2. Be able to describe the physical properties of soils.
3. Be able to define types of soil moisture and describe their relation to crop requirements.
4. List the chemical and mineral properties of soils, explain the needs of plants in relation to these chemicals and minerals and test soil to determine content of the major chemical and mineral elements.
5. Define and explain the relationship between micro-organisms and higher plants, and the relationship among micro-organisms.

Course Outline

I. Introduction to Soils

  A. Soil concepts.

    1. Define soil.
    2. Outline the origin and formation of soils.
    3. Cite three factors that cause soil differences.

  B. Soil as a medium for plant growth.

    1. List and describe the factors of plant growth as provided by soils.
    2. Describe the utilizations of the soil by plants as related to root systems and soil content.

  C. Physical properties of soils.

    1. Define soil texture and explain how to use a soil textural triangle.
    2. Define soil structure and explain how it developed.
    3. Explain the color variation of soils.

  D. Soil moisture.

    1. Define the classifications of soil water and describe their effects on soils and plant growth.
    2. Explain three ways water can move in the soil.

3. Explain why fertilizer can cause a decrease in the amount of water transpired per pound of plant material produced.
4. Explain how cultivation affects moisture loss from soils.

II. Soil Chemicals and Minerals

A. Ion exchange.

1. Define CEC.
2. Identify the source and amount of negative changes.
3. Describe exchangeable actions as a source of plant nutrients.

B. Soil reactions.

1. Define acid, neutral, and alkaline soils.
2. Differentiate between active and potential acidity.
3. List three processes that contribute to the development of acid soils.
4. List three nutrients that are likely to be deficient in soils with a pH of 8.0.
5. Define buffer and explain the role clay minerals play in the buffering capacity of a soil.
6. Define a saline soil and alkaline soil, and explain how plant growth is affected by each of these soils.

C. Soil and fertilizers.

1. Diagram the nitrogen cycle.
2. Describe nitrogen fixation.
3. Explain the significance of the C:N ratio.
4. Explain the basis for nitrogen fertilizer recommendations.
5. Identify the nitrogen carriers and make an economic comparison between them.

D. Soil and fertilizer phosphorus.

1. Explain the phosphorus cycle.
2. List the forms of soil phosphorus.
3. Describe the basis for phosphorus fertilizer recommendations.
4. List phosphorus fertilizers and explain their uses.
5. Discuss the environmental concerns with soils containing large amounts of phosphorus.

E. Soil and fertilizer potassium.

1. Explain the potassium cycle.
2. Describe the forms of potassium.
3. List the factors affecting the uptake of potassium.
4. Discuss the basis of potassium fertilizer recommendations.
5. List the potassium fertilizers.

F. Secondary macronutrients and the micronutrients of soils and fertilizers.

1. Describe the forms of the secondary macronutrients.
2. List the essential micronutrients and explain the purpose of each.
3. Describe micronutrient deficiency symptoms.

G. Mixed fertilizers.

1. Define fertilizer grade.
2. Briefly describe the major fertilizer systems.
3. Explain the methods of fertilizer and pesticide combinations and list the major considerations.

III. Soil Organisms

A. List the kinds of organisms found in soil.
B. Differentiate between heterotrophic and autotrophic bacteria.
C. Discuss the nutrient requirements of soil organisms.
D. List and explain the soil conditions which influence micro-organisms.
E. Define the following:

1. Mineralization
2. Decomposition
3. Ammonification
4. Nitrification
5. Oxidation
6. Reduction

F. List ways micro-organisms have detrimental influences on plant growth.

IV. Soil Organic Matter

  A. Define humus and describe the changes which occur as plant growth.
  B. Describe the composition of organic materials which are added to soils.
  C. Outline the accumulation and loss of soil organic matter.
  D. List the soil conditions favoring the accumulation of organic matter.

V. Fertilizer Applications and Practices

  A. List and describe the methods of fertilizer application.
  B. Discuss the fertilizer recommendation philosophies.
  C. Calculate the economies of fertilizer use.
  D. Calculate the amounts of fertilizer applications.
  E. List the environmental concerns of fertilizer use.
  F. Farm manures.

    1. Compare the quantity and quality of livestock manures.
    2. List the factors which influence the composition of manure.
    3. Define artificial manures.
    4. Define rotted manure and compare the values of fresh versus rotted manure.
    5. List the methods of storing, preserving, and applying manure.
    6. List and describe the effect of manure on soil.

VI. Land Evaluation and Conservation

  A. Evaluation

    1. Determine soil texture and structure.
    2. Determine soil permeability and depth.
    3. Determine the slope of a land site and how it affects the erosion of the site.

  B. Conservation

    1. Define erosion.
    2. List the types of wind and water erosion and list methods of controlling these problems.

Horticulture 1308
Plant Physiology and Diseases

Course Objectives

Upon the successful completion of this course, the student will:

1. Be able to identify the parts of the cell and list the function/functions of each part.
2. Be able to discuss plant growth by cell division, elongation, and differentiation.
3. Be able to describe photosynthesis, the process, the function, the inputs, and the products.
4. Be able to describe respiration in plants, the process, the function, the inputs, and the products.
5. Be able to trace the movement of water and nutrients through the plant.
6. Be able to list factors associated with growth and describe how each factor controls growth of plants.
7. Be able to define "plant disease."
8. Be able to classify diseases of plants.
9. Be able to list methods of disease prevention, treatment, and control.

Course Outline

I. Internal Plant Structure

   A. Cell

      1. Label the parts of a plant cell.
      2. Describe the functions of the cell components.

   B. Tissue

      1. Identify types of root, leaf, and stem tissue.
      2. Define the function of tissue found in roots, leaves, and stems.

II. Plant Growth

   A. Define cell division, elongation, and differentiation.
   B. Locate and outline areas of growth in plants.
   C. List and explain the steps of mitosis and meiosis.

D. Illustrate the control of growth by the following factors:

   1. Nutrients
   2. Hormones
   3. Light
   4. Photoperiod
   5. Temperature

III. Photosynthesis

A. Identify how light energy is absorbed by the plant.
B. Outline the process of transforming light energy into chemical energy.
C. Trace the pathway through which oxygen is released from water.
D. Trace the pathway through which carbon dioxide is transformed into sugar.
E. Outline how CAM plants manufacture food.

IV. Respiration

A. Define respiration.
B. Compare and contrast photosynthesis and respiration.
C. Outline the steps of respiration using the chemicals metabolized and the products of respiration.
D. Differentiate between light and dark respiration.

V. Water and Nutrient Movement in Plants

A. Identify structures in the plant involved with the absorption, transport, and release of water and explain how they function.
B. Trace water as it moves into and is transcribed in plants.
C. Trace nutrients as they enter into the plant and how they are translocated through the plant.
D. Define transpiration, list plant activities that are involved with transpiration and explain how these activities control plant turgidity.

VI. Plant Diseases

A. Classify infectious and noninfectious diseases.
B. List principles of disease diagnosis.
C. List principles of disease prevention.
D. List principles of disease control.
E. List common symptoms of major disease types.

F. Outline methods for determining economic threshold.
G. Outline procedure for collecting and sending plant material to a disease testing laboratory.

VII. Definitions

Define terms as per student handout.

Horticulture 1312
Plant Breeding and Propagation

Course Objectives

1. The student will be able to identify and list purposes for propagating structures, equipment, tools, media, fertilizers, and containers.
2. The student will be able to outline and explain the sanitation procedures used during propagation of plants.
3. The student will be able to propagate plants by sexual and asexual methods.
4. The student will be able to identify and list natural and synthetic plant hormones used for plant propagation.

Course Outline

I. Structures, Equipment, Tools, Media, Etc.

  A. Describe the structural design and explain the functions of the following:

    1. Greenhouse
    2. Hot house
    3. Cold frame
    4. Lath house
    5. Heated propagator

  B. Identify and list the uses of the following:

    1. Watering devices
    2. Secateurs
    3. Trowels
    4. Budding and grafting knives
    5. Dibble

  C. List the characteristics of a media mix.
  D. List the components used in media mixes.
  E. List types of fertilizers used for outdoor and indoor plants.
  F. Identify, describe, and list functions of the following:

    1. Flats
    2. Clay pots
    3. Plastic pots
    4. Fiber pots
    5. Peat or fiber blocks
    6. Bags

II. Sanitation

A. Define soil pasteurization.
B. Outline procedures to prevent the spread of pathogens during the propagation of plants.

III. Sexual Propagation

A. Summarize the development of the seed and spore.
B. Define seed germination, seed dormancy, seed scarification, and seed stratification.
C. Outline procedures for harvesting, processing, and storing seeds for vegetable and ornamental plants.
D. Use stratification and scarification techniques to propagate plants by seed.
E. Propagate plants by spores.

IV. Asexual Propagation

A. List reasons for propagating plants by asexual methods.
B. List the asexual methods of propagating plants.
C. Explain how plants are able to reproduce asexually.
D. Outline the "Plant Patent Law".
E. Propagate plants by the following means:

    1. Cuttings
    2. Budding
    3. Grafting
    4. Division
    5. Layering
    6. Separation
    7. Tissue culture

Horticulture 2302
Pests and Pesticides

COURSE OBJECTIVES

Upon the successful completion of this course, the student will:

1. Be able to classify pesticides according to use formulation and application.
2. Be able to use the terminology and identify equipment used in the application of pesticides.
3. Demonstrate the methods of calibration of equipment and demonstrate the safe application of pesticides.
4. Identify pests of plants and list methods of control.
5. List the necessary requirements for certification and necessary information required of applicators.
6. Be able to list environmental concerns in the use of pesticides.

COURSE OUTLINE

I. Pesticides

   A. List some of the early pesticides used before the 1800s.
   B. Justify, by essay, the use or nonuse of pesticides in modern agriculture.
   C. Identify the types of people that are pesticide users.
   D. Match pesticides with their target species.
   E. Classify pesticides as to formulation and specificity.

II. Terminology and Equipment

   A. Label the anatomy of insect pests, vegetative pests, and weeds.
   B. Label and explain the function of the parts of pesticide application equipment.
   C. Define the types of pesticide formulations.
   D. Define terms as per student handout.

III. Pesticide Application Calibration

   A. Explain the purpose for equipment calibration.
   B. Outline an discuss the various calibration methods for the following types of equipment:

      1. Hand sprayers
      2. Boom sprayers
      3. Band applicators
      4. Air blast sprayers
      5. Fumigation applicators
      6. Granular applicators

C. Outline procedures for calibrating aerial equipment.
D. Explain the purpose for calculating formulations.
E. Make calculations for the following:

    1. Liquid mixing
    2. Wettable powders
    3. Percentage mixing
    4. Dust mixing
    5. Granular mixing
    6. Square feet calculations and mixing

IV. Pesticide Safety

A. List factors used in making a proper selection of a pesticide.
B. List rules to follow in handling and mixing pesticides.
C. List and discuss the rules and recommendations for safe storage and disposal of pesticides and pesticide containers.
D. List protective clothing and equipment used in pesticide application.
E. List pesticides poisoning effects and symptoms.
F. List first aid procedures to follow in case of pesticide poisoning.
G. List and explain the minimum requirements for a pesticide label to be complete.
H. Explain the need for and the type of records to be kept concerning pesticide application.

V. Pest Identification and Control

A. Collect insect and vegetative pets as per lab syllabi.
B. Collect information on vertebrate pests as per lab syllabi.
C. List control methods for collected pests.
D. Explain the pesticide control programs.
E. Identify disease resistant plants.
F. Identify insect resistant plants.

VI. Certified Applicator Requirements

A. List and define the types of certified applicators and requirements for each.
B. List government regulating agencies concerned with applicator certification.
C. List and define the areas in which an applicator may be certified.

VII. Environmental Concerns

A. Define the parameters concerned with pesticide application and the reaction with the following:

1. Soil
2. Water
3. Air
4. Plants
5. Beneficial species

B. Explain pesticide persistence and accumulation and the effect on the environment.

C. List recommendations for pesticide applicators to follow in order to protect the environment.

D. List the federal and state agencies concerned with the application of pesticides and outline their control on pesticide application.

Horticulture 2305
Fruit and Vegetable Production

COURSE OBJECTIVES

1. The student will be able to list and recommend varieties of fruits and vegetables to be used for fresh and processed in south and central Texas.
2. Students will be able to select planting methods for fruits and vegetables.
3. Students will be able to list the methods for the irrigation of fruit and vegetable crops.
4. Students will be able to identify nutritional deficiencies in fruits and vegetables and list recommendations for soil amendments.
5. Students will be able to identify insect and disease damage to fruits and vegetables and list methods of control of insects, diseases, and weeds.
6. Students will outline and describe the harvesting and processing methods of fruits and vegetables.
7. Students will be able to list the soil requirements for the production of fruits and vegetables.

COURSE OUTLINE

I. Inputs

   A. Management

      1. Outline the types of crop managers.
      2. List the general qualifications of managers.

   B. Time

      1. List the establishment time, bearing time, time for full production, and life span of fruits, nuts, and vegetables.
      2. Outline the time required for travel, maintenance, and harvesting crops.

   C. Unit size

      1. List the factors concerned with the balance of selecting a unit size.
      2. Categorize operations as to small, part-time, family, and corporate units.

   D. Financing, list methods of obtaining capital and credit.

E. Climate

1. List factors of climate to consider for site selection.
2. Define chilling requirements and heat requirements for crops.

F. Site selection

1. List the factors to be considered in selecting a desirable site for crop growth.
2. Describe these factors as related to expected harvest yields.

G. Soil, identify soil types as related to expected harvest yields.
H. Nutrition

1. List the essential elements required for plant growth.
2. Explain the purpose and proper ranges of a leaf and soil sample as concerned with plant nutrition.

I. Varieties

1. List the objectives of varieties of fruits, nuts, and vegetables.
2. List the varieties and qualities of fruits, nuts, and vegetables.

II. Planting Methods

A. Outline a schedule for preparation of the crop.
B. Outline a nutritional schedule for the crop.
C. Outline a watering schedule for the crop.
D. Outline a pest control schedule for the crop.
E. Outline a pruning schedule for the crop.
F. Outline a harvesting schedule for the crop.

III. Harvesting and Marketing

A. Describe the various techniques and methods of harvesting.
B. List the different ways to market crops and describe each.

Horticulture 2315
Plant Identification II - Herbaceous and Exotic Plants

COURSE OBJECTIVES

Upon the successful completion of this course, the student will:

1. Identify plants using their morphology.
2. Classify plants using growth habits, leaf bearing habits, life span,and temperature tolerance.
3. Identify plants using both the common and scientific name.
4. Be able to provide information on landscape use and propagation of plants.
5. Be able to locate areas of distribution better suited for the particular placement of plants.
6. Be able to identify plants from live specimens or container plants and from photographs or slides.

COURSE OUTLINE

I. Plant Morphology

   A. Identify and define plant forms.
   B. Identify, define, and label major parts of the external anatomy of the plant.
   C. Identify common leaf shapes.
   D. Identify leaf tips.
   E. Identify leaf margins.
   F. Identify leaf types.
   G. Identify types of flower arrangement.
   H. Identify types of flowers.
   I. Identify individual flower parts.

II. Plant Classification

   A. Classify plants accorting to form.
   B. Classify plants accorting to growth habits.
   C. Classify plants accorting to leaf bearing habit.
   D. Classify plants accorting to life span.
   E. Classify plants accorting to temperature tolerance.
   F. Classify plants accorting to flowering characteristics.

III. Plant Propagation and Uses

   A. Identify the best method of propagation of the listed plants.
   B. List the uses for the listed plants.

IV. Identification

A. Use common name, genus, and species.
B. Spell names correctly.
C. Use the following list:

1.	Acalypa wilkesiana	Jacob's coat, Copperleaf
2.	Adiantum raddianum	Delta Maidenhair fern
3.	Aechemea fasciata	Urn Plant, Silver Vase
4.	Aeschynanthus pulcher	Scarlet Basket Vine Lipstick Plant
5.	Agave victoriae-reginae	Queen Agave
6.	Aglaonema commutatum	Silver Evergreen
7.	Aglaonema commutatum maculatum	Silver Evergreen
8.	Aglaonema commutatum "Franscher"	Franscher Evergreen
9.	Aglaonema commutatum "Pseudobracteatum"	Golden Evergreen
10.	Aglaonema commutatum "Silver King"	Silver King Evergreen
11.	Aglaonema commutatum "Treubii"	Ribbon Aglaonema
12.	Aglaonema costatum	Spotted Evergreen
13.	Aglaonema crispum	Painted Drop Tongue
14.	Aglaonema modestum	Chinese Evergreen
15.	Aloe barbadensis	Barbados Aloe, Medicinal Aloe, Burn Plant
16.	Ananas comosus	Pineapple
17.	Anthurium X cultorum	Flamingo Lily
18.	Aphelandra squarrosa	Zebra Plant, Saffron Spike
19.	Araucaria heterophylla	Norfolk Island Pine
20.	Ardisia crenata	Coralberry, Spiceberry
21.	Asparagus densiflorus "Sprengeri"	Sprenger Asparagus
22.	Asparagus densiflorus "Myers"	Plume Asparagus
23.	Asparagus setaceus	Asparagus Fern, Lace Fern
24.	Aspidistra elatior	Cast Iron Plant, Barroom Plant, Parlor Palm
25.	Beaucarnea recurvata	Ponytail Palm, Elephant Palm
26.	Begonia X semper florens-cultorum	Wax Begonia, Bedding Begonia
27.	Begonia X erythrophylla	Beefsteak Begonia
28.	Begonia masoniana	Iron Cross Begonia
29.	Begonia X rex-cultorum	Rex Begonia
30.	Brassaia actinophylla	Australian Umbrella Tree Octopus Tree
31.	Caryota mitis	Burmese Fistail Palm, Clustered Fishtail Palm

32. Cereus peruvianus	Peruvian Apple, Column Cactus
33. Ceropegia woodii	Rosary Vine, String of Hearts
34. Chamaedorea elegans	Parlor Palm
35. Chamaerops humulis	European Fan Palm
36. Chlorophytum comosum	Spider Ivy, Spider Plant
37. Chlorophytum comosum "Vittatum"	Varigated Spider Ivy
38. Chrysalidocarpus lutescens	Areca Palm, Yellow Palm
39. Cissus rhombifolia	Grape Ivy, Venezuela Treebine
40. Cissus antarctica	Kangaroo Vine
41. Cissus rotundifolia	Arabian Wax Cissus
42. Codiaem variegatum pictum	Garden Croton
43. Coffea Arabica	Coffee
44. Coleus X hybridus	Garden Coleus
45. Cordyline terminalis	Goodluck Plant, Hawaiian Ti
46. Crassula argentea	Jade Plant, Jade Tree
47. Crassula argentea "Tricolor"	Tricolor Jade Plant
48. Cryptanthus bivittatus	Earth Star
49. Cryptanthus X "It"	Color Band Cryptanthus
50. Cuphea ignea	Cigar Flower, Cigar Plant, Firecracker Plant
51. Cycas revoluta	Sago Palm, Conehead, Funeral Palm
52. Cyperus alternifolius	Umbrella Plant, Umbrella Palm
53. Cyrtomium falcatum	Holly Fern
54. Dieffenbachia amoena	Giant Dumbcane, Charming Dumbcane
55. Dieffenbachia exotica	Exotic Diffenbachia
56. Dieffenbachia exotica "Perfection"	Perfection Dumbcane
57. Dieffenbachia maculata	Spotted Dumbcane
58. Dieffenbachia maculata "Rudolph Roehrs"	Yellow Leaf Dumbcane
59. Dizygotheca elegantissima	False Arelia
60. Dracena fragrans "Massangeana"	Corn Plant
61. Dracena deremensis "Janet Craig"	Janet Craig Dracena
62. Dracena deremensis "Warkeckii"	Striped Dracena
63. Dracena goldieana	Queen of Dracenas
64. Dracena marginata	Madagascar Dragon Tree, Red Edged Dracena

65. Dracena sanderiana	Belgian Evergreen, Ribbon Plant
66. Dracena surculosa	Gold Dust Dracena Spotted Dracena
67. Epipremnum aureum	Pothos, Golden Pothos
68. Episcia cupreata	Flame Violet
69. Euphorbia milii splendens	Crown of Thorns
70. X Fatshedra lizei	Aralia Ivy
71. Fatsia japonica	Japanese Fatsia
72. Ficus benjamina	Benjamin Tree, Weeping Fig
73. Ficus deltoidea	Mistletoe Fig
74. Ficus elastica "Decora"	Wideleaf Rubber Plant
75. Ficus elastica "Variegata"	Varigated Rubber Plant
76. Ficus lyrata	Fiddle Leaf Fig
77. Ficus pumila	Creeping Fig
78. Fittonia vershaffeltii	Red Nerve Plant, Mosiac Plant
79. Fittonia verschaffeltii argyroneura	Silver Nerve Plant
80. Gibasis geneculata	Tahitian Bridal Veil
81. Gynura aurantiaca "Purple Passion"	Purple Passion Vine
82. Hedera helix	English Ivy
83. Hemigrapis alternata	Red Ivy
84. Heptaplureum arboricola	Dwarf Schefflera
85. Howea forsterana	Sentry Palm, Kentia Palm
86. Hoya carnosa	Wax Plant, Honey Plant
87. Hoya carnosa "Krinkle Kurl"	Hindu Rope
88. Hypoestes phyllostachya	Polka Dot Plant, Freckle Face
89. Iresine herbstii	Beef Plant, Chicken Gizzard, Beefsteak Plant
90. Kalanchoe daigremontiana	Devil's Backbone
91. Maranta leuconeura	Prayer Plant, Ten Commandments
92. Maranta leuconeura eurythroneura	Red Nerve Plant, Red Veined Prayer Plant
93. Maranta leuconeura kerchoviana	Rabbit's Foot, Rabbit's Track
94. Mikania ternata	Plush Vine
95. Mimosa pudica	Sensitive Plant, Touch Me Not
96. Monstera deliciosa	Swiss Cheese Plant, Breadfruit Vine

97.	Neoreglia cariolinae "Tricolor"	Striped Blushing Bromeliad
98.	Nephropepis exalta "Bostoniensis"	Boston Fern
99.	Nephropepis exalta "Fluffy Ruffles"	Fluffy Ruffles Fern
100.	Opuntia microdasys	Rabbit Ears
101.	Pandanus veitchii	Veitch Screw Pine
102.	Pellionia pulchra	Satin Pellionia, Rainbow Vine
103.	Peperomia obtusifolia	Baby Rubber Plant, Pepper Face
104.	Pepromia obtusifolia "Variegated"	Varigated Peperomia
105.	Peperomia argyreia	Watermelon Begonia
106.	Peperomia caperata	Emerald Ripple Peperomia
107.	Peperomia scandens	Philodendron Peperomia
108.	Philodendren scandens oxycardium	Heart Leaf Philodendron
109.	Philodendron bipennifolium	Horsehead Philodendron
110.	Philodendron domesticum	Spade Leaf Philodendron, Elephant's Ear
111.	Philodendron X "Emerald Duke"	Emerald King Philodendron
112.	Philodendron X "Florida"	Florida Philodendron
113.	Philodendron X "Majesty"	Majesty Philodendron
114.	Philodendron X "Red Duchess"	Red Princess Philodendron
115.	Philodendron scandens micans	Velvet Leaf Philodendron
116.	Philodendron selloum	Tree Philodendron, Saddle Leaf Philodendron
117.	Phoenix roebelenii	Miniature Date Palm
118.	Pilea cadierei	Aluminum Plant
119.	Pilea microphylla	Artillery Plant
120.	Pilea "Moon Valley"	Moon Valley Plant
121.	Pilea nummulariifolia	Creeping Charlie
122.	Pilea "Silver Tree"	Silver Tree Panamiga
123.	Pittosporum tobira	Japanese Pittosporum, Australian Laurel, Mock Orange
124.	Platycereum birurcatum	Common Staghorn Fern
125.	Plectranthus australis	Swedish Ivy
126.	Podocarpus macrophyllus	Southern Yew, Japanese Yew, Buddhist Pine
127.	Polysicias fruitcosa	Ming Aralia, Chinese Aralia, Parsley Aralia

128.	Pteris ensiformis "Victoriae"	Victoria Brake Fern, Silver Leaf Fern
129.	Rhpais excelsa	Bamboo Palm, Slender Lady Palm
130.	Rhoeo spathacea	Purple Leaved Spiderwort Moses in the Cradle
131.	Saintpaulia ionantha	Common African Violet
132.	Sansevieria trifasciata	Snake Plant, Mother In Law Tongue
133.	Sansevieria trifasciata "Hahnii"	Bird's Nest Sansevieria
134.	Sansevieria trifasciata laurentii	Varigated Snake Plant
135.	Saxifraga stolonifera	Strawberry Geranium, Strawberry Begonia, Creeping Sailor, Mother of Thousands
136.	Schlumbergera bridgesii	Christmas Cactus
137.	Scindapsus pictus "Argyraeus"	Satin Pothos
138.	Sedum morganianum	Burro's Tail, Donkey's Tail, Lamb's Tail
139.	Senecio mikaniodes	German Ivy, Parlor Ivy
140.	Senecio macroglossus "Variegatum"	Varigated Wax Vine
141.	Senecio rowleyanus	String of Beads, Bead Vine
142.	Soleirolia soleirolii	Baby's Tears
143.	Spathiphyllum "Clevelandii"	White anthurium, Peace Lily
144.	Spathiphyllum "Mauna Loa"	Muana Loa Peace Lily
145.	Streptocarpus saxorum	False African Violet
146.	Syngonium podophyllum	Nephthytis, Arrowhead Vine
147.	Tolmiea menziesii	Piggyback Plant
148.	Tradescantia fluminensis	Wandering Jew
149.	Yucca elephantipes	Spineless Yucca

Horticulture 2317
Managing Agriculture Business

COURSE OBJECTIVES

Upon the successful completion of this course, the student will:

1. Be familiar with the fundamentals of planning a business.
2. Recognize and list types of records and the methods of their management.
3. Outline the operational procedure of an office and develop a list of necessary equipment.
4. Be familiar with the business terminology, some statistics used in business, business law, and publications used by trades and businesses.
5. Develop methods for controlling inventory, merchandising, and advertising.
6. Be able to use salesmanship techniques and public relations in the business.
7. Be familiar with the application of computers in business.

COURSE OUTLINE

I. Business Planning

   A. Define the forms of business ownership and list the advantages and disadvantages of each.
   B. Define strategic planning, explain the process, and explain why it may fail.
   C. List the types of franchises, the benefits of them, and their drawbacks.

II. Records

   A. Identify the types of records and types of systems required in business.
   B. Define the terminology as it is used in record keeping and in general business.
   C. Identify sources of equity capital.

III. Office Operations and Equipment

   A. List the basic equipment and furniture requirements of a typical office.
   B. List the advantages and disadvantages of using computers in business.
   C. List the ways computers are used in business.
   D. List the factors involved in securing sources for office staff.
   E. Define the types of office and business crimes and list preventative measures.

IV. Business Law, Statistics, and Publications

- A. List and define the six elements of a contract.
- B. Outline the major components of the Uniform Commercial Code.
- C. Identify the major points of the law involving sales warranties and product liabilities.
- D. List and explain the process of applying for a patent, trademark, or copyright.
- E. Compare the success rate of creating a new business as opposed to buying an existing one.
- F. Develop a list of trade associations and professional publications which relate to a horticulture business.

V. Inventory, Merchandising, and Advertising

- A. Describe the importance of inventory control.
- B. Define the "80/20 rule" and illustrate its application to inventory management.
- C. List the advantages and the disadvantages of the visual inventory control system.
- D. Describe the operations of an ABC inventory control system.
- E. Outline several techniques for minimizing inventory costs.
- F. Define marketing, the components of a marketing plan, and the benefits of a marketing plan.
- G. Define the concept of "competitive edge."
- H. Illustrate how the elements of a marketing mix work together to enhance a small business' success in marketing its goods and services.
- I. Demonstrate the stage of the produce life cycle and the various channels of distribution.
- J. Identify consumer credit as related to marketing.
- K. Define advertising and distinguish it from publicity, sales promotion, and personal selling.
- L. List reasons for promotional advertising.
- M. Illustrate advantages and disadvantages of the various media.
- N. Present the steps in the development of a business advertising plan.
- O. Identify four basic methods for preparing an advertising budget.

VII. Salesmanship and Public Relations

- A. Evaluate the phrase "The customer is always right."
- B. List the factors involved with evaluating the types of customers.
- C. List and describe market plans that are related to customers.

Horticulture 2350
Horticulture Cooperative Training

COURSE OBJECTIVES

While enrolled in this course:

1. The student should develop the basic skills required in order to become a competent employee in an occupation.
2. The student should develop the technical and related aspects of an occupation through class work under the supervision of the instructors.
3. The student should acquire an appreciation, attitudes, and work habits that will contribute toward the development or good citizenship by developing his/her physical, social, civic, cultural, and economic competencies.
4. The student is provided an opportunity to learn an occupation while earning credit toward an associates degree.
5. The student is provided an opportunity to prepare for a higher education.

COURSE OUTLINE

I. Required Skills for Competent Employees

    A. Become familiar with some of the characteristics which contribute to successful full-time and part-time employment.
    B. List the things employers have a right to expect of the employee.
    C. Realize the importance of good employee/employer relations to job success and the responsibilities of the employee and employer in achieving a good working relationship.
    D. Become aware of the importance of good working relationships among employees and factors to consider in improving personal relationships.
    E. Realize the importance and necessity for developing social skills to be used on and off the job.

II. Technical and Related Aspects of an Occupation

    A. Understand the importance of accurate business records and the kinds of records necessary for businesses to keep.
    B. Become familiar with the forms used in business for selling, ordering, and receiving merchandise.
    C. List the steps in receiving and storing merchandise.
    D. Understand the factors that enter into the determination of the selling price of merchandise.
    E. Determine stocking levels.

F. Become acquainted with the ways accidents can be prevented.
G. Develop telephone courtesy.
H. List the characteristics of a good salesperson and how they are developed.
I. Be familiar with the factors that are important in meeting customers.

III. Attitudes and Work Habits Contributing to Employee Competence

A. Understand how to build a philosophy of life that will enable the student to be a happier more useful person.
B. Become aware of behavior traits within oneself and others.
C. Analyze the statement, "Honesty is the best policy."
D. Explain how to make the most of the student's learning abilities.
E. Become acquainted with problems and how to develop solutions.
F. Develop ways to increase self-confidence.

CERTIFICATE PROGRAM COURSE OUTLINES

Agriculture 1301
Introduction to Agricultural Economics

Course Objective

Upon the successful completion of this course, the student will:

1. Describe and relate examples of economic principles to the field of agriculture.
2. Determine methods of pricing, marketing, and consumption of agricultural products and how economic principles affect pricing, marketing, and the consumption of agricultural products.
3. Apply economic principles and concepts to the assembly of and processing and distribution of products of the agricultural industry.
4. Know the sources and how to use agricultural economic information, economic institutions, and economic organizations.

Course Outline

I. Introduction

  A. The science of economics.

    1. List and explain the steps in the decision making process.
    2. Define economics and explain why economics should be studied.
    3. List the function of an economic system and describe the economic goals of society.
    4. Define microeconomics, macroeconomics, and agricultural economics.
    5. List and describe economic models by type of industry and market.

  B. Relationships between agriculture and the national economy.

    1. Draw and label a circular flow diagram illustrating how households and business firms interact. Explain this diagram.
    2. Define the economic goals of macroeconomics.

      a. List the sequence and endogenous economic problems of agriculture.
      b. Explain the microeconomic adjustments to macroeconomic decisions.

3. Explain the monetary and fiscal policy relationships between agriculture and the national economy.
4. Define the role agriculture plays in the national economy.

C. Agriculture in the U.S.

1. Agricultural systems

    a. Define production agriculture.
    b. Define agribusiness and explain the relationship of agricultural sales, supply, service, and marketing to agricultural production.
    c. Outline the organizational structure of the agricultural marketing system.

2. Structural characteristics of farm industries.

    a. Classify farms and agricultural businesses.
    b. Compare the numbers and sizes of agricultural businesses.

3. Outline methods for measuring agricultural productivity and efficiency.

D. Types of business organizations. Define and give examples of each:

1. Proprietorship
2. Partnership
3. Cooperative
4. Corporation
5. Other control ownership methods

E. Comparative economic systems.

1. Explain the role of government in economic systems.
2. Define and compare the following economic systems:

    a. Capitalism
    b. Communism
    c. Socialism
    d. Mixed systems
    e. Other governmental systems

F. Market structure analysis.

1. Comparative models.

   a. Define pure competition, list the necessary conditions for its existence and give examples of pure competition.
   b. Define and list examples of monopolistic competition.
   c. Define and list examples of oligopoly and other market models.

2. List the effects of market structure on the product and on the consumer.

II. Economic Principles of Production

A. Define agricultural production and list the processes concerned with such.

B. Concepts of production function.

1. Define the following and give examples of each:

   a. Total physical product
   b. Average physical product
   c. Marginal physical product

2. Explain the importance and need for fixed resources.

C. Supply concepts.

1. List the factors affecting supply.
2. List the forces that affect increases, decreases, or shifts in supply.
3. List the factors that affect the price elasticity of supply.

D. Factors affecting supply.

1. Outline the factor-product relationship concerned with how much to produce.
2. The costs of production.

   a. Classify costs.
   b. Compute costs.
   c. Relate costs to production.
   d. Describe profit maximization.
   e. List changes in technology affecting production.
   f. Outline pricing of alternative products.

E. Concepts of elasticity.

  1. Define elasticity of demand and explain what determines elasticity of demand.
  2. Explain the relationship between price elasticity of demand and elasticity of supply.

F. Describe how fixed and variable costs are related to the time factor of production as concerned with long run and short run periods.

G. List and explain the principles of profit maximization.

III. Concepts of the Consumer

A. Define the law of diminishing marginal utility and give examples of such.
B. Define demand and describe this in relation to price and quality.
C. List and give examples of factors that affect demand.

  1. Income
  2. Population
  3. Tastes and preferences.
  4. Price and availability of other products.
  5. Social factors.

D. List the factors that affect the elasticity of demand.
E. List and explain the elasticities for agricultural products.

  1. Equilibrium
  2. Factors causing price change.
  3. Role of prices in resource allocation.
  4. Characteristics of agricultural prices.

IV. Selected Economic Topics

A. Capital in agriculture.

  1. List the types and sources of capital.
  2. List the sources of agricultural credit.
  3. Define and describe the structure and components of the Farm Credit System.
  4. Calculate interest rates.
  5. Define and give examples of compound and discount principles.

B. Natural resources

1. List common property resource problem.
2. Describe agricultural resources available to the producers.

C. Rural development

1. List reasons for the decline of growth in rural areas and communities.
2. List the problems in rural areas.

D. Public policy

1. Define policy.
2. List issues concerning food and farm output.
3. List past and present policy alternatives.
4. Outline the Farm Bill.

E. World trade and agriculture

1. List the basis for foreign trade and outline the U.S. policy.
2. Explain the economic effects of tariffs and quotas.
3. Outline the American agricultural trade system.
4. Define the balance of trade.
5. Outline the global food issues.

V. Definitions. Define the terms as listed in the student text.

Agriculture 1305
Horticulture 1305
General Horticulture

Course Objectives

Upon the successful completion of this course, the student will be able to:

1. Define horticulture as a science.
2. Describe the economic position of horticulture and the utilization of horticultural crops.
3. Discuss the historical perspective of horticulture.
4. Define the fields of horticulture and the relationship of each.
5. Describe the skills and training required for the fields of horticulture.
6. Define common taxonomic terms.
7. Describe how plants grow and list and describe factors affecting plant growth.
8. Describe characteristics of and demonstrate techniques of sexual and asexual reproduction of plants.
9. Characterize insects and groups of pathogens as plant pests.
10. List the principles of pest control.
11. Describe various harvesting, processing, and marketing methods of horticultural crops.
12. List and describe types of growing structures.
13. List and describe production techniques.
14. List and discuss fundamentals required for consideration before beginning a horticultural business.
15. Define the objectives of personnel management.
16. Describe correct communication procedures for horticultural businesses.
17. Identify the types of records necessary for operating a horticultural business.

Course Outline

I. Horticulture as a Science

   A. Define horticulture and the Latin derivative.
   B. List the natural sciences and technologies contained within and involved in the horticulture industry.

II. Economic Position and Utilization of Horticultural Crops

   A. Identify the monetary value of horticulture crops.
   B. Identify the percentage of horticulture crops consumed in the United States.

III. History of Horticulture

- A. Summarize, in essay form, the history of horticulture and how it began.
- B. Outline developments that advanced plant agriculture and horticulture.
- C. List and approximately date advancement made in crop science for this century.

IV. Fields of Horticulture

- A. Define and describe the professions contained in the following fields of horticulture.

    1. Pomology
    2. Olericulture
    3. Floriculture
    4. Nursery culture
    5. Landscape design
    6. Interiorscaping
    7. Specialized and nontraditional areas

- B. Describe the categories of employment of the fields of horticulture listed above.
- C. Describe different types of:

    1. Nurseries
    2. Landscapes

V. Skills and Training Required in the Various Fields of Horticulture

- A. Outline the educational requirements of professions within the various fields of horticulture.
- B. Identify the training and skills required for the professions within the various fields of horticulture.

VI. Planting, Culture, Care, Harvesting, and Utilization of Horticultural Crops

- A. List and define various plant classification systems.
- B. Describe the natural classifications for the plant kingdom.
- C. Use scientific plant names correctly.
- D. Define common taxonomic and professional terms.
- E. Describe plants using taxonomic terms.
- F. Demonstrate the use of a plant key.

VII. Plant Growth

A. Define:

1. Plant growth
2. Photosynthesis
3. Respiration
4. Transpiration

B. Describe the environmental factors that affect plant growth.
C. Describe how environmental factors affect plant growth.
D. Distinguish between vegetative growth and reproductive growth.
E. Define growth regulators.
F. List and describe functions of both natural occurring and synthetic growth regulators.

VIII. Characteristics and Techniques of Sexual and Asexual Reproduction

A. Describe the characteristics of sexual and asexual reproduction in plants.
B. Describe the process of mitosis and meiosis.
C. List the most common propagation techniques.
D. Discuss methods of plant improvements.
E. List types of media mixes and identify their components.
F. Demonstrate techniques for propagation by use of:

1. Cuttings
2. Seeds
3. Grafting
4. Budding
5. Layering

IX. Insects and Diseases

A. List major causes of injury to plants.
B. Characterize insects as plant pests.
C. Characterize groups of pathogens as plant pests.
D. List common symptoms of injured plants.

X. Pest Control

A. List the principles of pest control.
B. Describe the types of pesticides and their safe use.
C. Explain the concepts of biological controls.

XI. Harvesting Processing and Marketing

A. Describe methods of harvesting different horticultural crops.
B. List changes that occur in harvested produce.
C. Outline the purpose and methods of grading produce.
D. Identify process of market preparation for produce.
E. List methods of transportation and discuss advantages and disadvantages.
F. Outline factors concerning the storage and preservation of produce.
G. Describe the method of food processing.

XII. Growing Structures

A. List and compare the types of growing structures.
B. List the characteristics of greenhouse coverings.
C. List the advantages and disadvantages of different methods of greenhouse heating.
D. Describe the methods of ventilating or cooling a greenhouse.
E. List and describe energy conserving methods used in greenhouses.
F. Diagram greenhouse bench arrangement systems and identify their efficiency.

XIII. Production Techniques

A. Explain the need for a crop production schedule.
B. Describe methods of media pasteurizing.
C. Discuss the need for soil testing.
D. Outline the methods of fertilization, irrigation, and spacing of horticulture crops.
E. Explain techniques of pruning.
F. Identify the need for the development of production schedules.

XIV. Starting Your Own Business

A. Describe the forms of business ownership.
B. Explain the use and value of market surveys.
C. List some sources of capital.
D. List factors to consider in selecting a site for a business.
E. Outline the major laws and regulations affecting horticultural businesses.
F. Describe the methods, values, and limitations of advertising.
G. List characteristics of effective advertising.
H. List characteristics of effective displays.

XV. Personnel Management

A. Define and list the objectives of personnel management.
B. List the characteristics of a good personnel manager.
C. List the characteristics of a good salesperson.
D. Describe an effective sales procedure.

XVI Business Communications

A. List the parts of a business letter.
B. Outline how to place a business telephone call correctly.
C. Outline how to answer a business telephone call correctly.

XVII. Record Keeping

A. List four characteristics of a good record keeping system.
B. List the four types of business records kept.
C. Define the profit and loss statement.
D. Define the balance sheet.
E. Describe the approaches to pricing merchandise and services.
F. List the advantages and disadvantages of the applications of computers in horticultural businesses.

Horticulture 1314
Plant Identification I
Trees, Shrubs, Vines, and Ground Cover

Course Objectives

Upon the successful completion of this course, the student will:

1. Identify plants using their morphology.
2. Classify plants using growth habits, leaf bearing habit, life span, and temperature tolerance.
3. Identify plants using both the common and scientific name.
4. Be able to prove information on landscape use and propagation of plants.
5. Be able to locate areas of distribution better suited for the particular plants growth.
6. Be able to identify plants from live specimens in the field, landscape, or container plants and from photographs or slides.

Course Outline

I. Plant Morphology

  A. Identify and define plant forms.
  B. Identify, define, and label major parts of the external anatomy of the plant.
  C. Identify common leaf shapes.
  D. Identify leaf tips.
  E. Identify leaf margins.
  F. Identify leaf types.
  G. Identify types of flower arrangement.
  H. Identify types of flowers.
  I. Identify individual flower parts.

II. Plant Classification

  A. Classify plants according to form.
  B. Classify plants according to growth habits.
  C. Classify plants according to leaf bearing habits.
  D. Classify plants according to life span.
  E. Classify plants according to temperature tolerance.
  F. Classify plants according to flowering characteristics.

III. Plant Propagation and Uses

  A. Identify the best method of propagation of the listed plants.
  B. List the uses for the listed plants.
  C. Label areas of distribution for listed plants.

IV. Identification

A. Use common name, genus, and species.
B. Spell names correctly.
C. Use the following list:

TREES

1.	Acacia Farnesiana	Sweet Acacia (Huisache)
2.	Acer palmatum	Japenese Maple
3.	Acer rubrum	Red or Swamp Maple
4.	Acer saccharinum	Silver Maple
5.	Acer saccharinum subsp. grandidentatum	Big Tooth Maple
6.	Albizia Julibrissin	Mimosa (Silk) Tree
7.	Betula nigra	River or Black Birch
8.	Carya illinoinensis	Pecan
9.	Catalpa bignoniodes	Southern Catalpa
10.	Celtis occidantalis	Common Hackberry
11.	Cercis canadensis	Eastern redbud
12.	Cedrus deodara	Deodar Cedar
13.	Chamaerops humulis	Mediterranean Fan Palm
14.	Chilopsis linearis	Desert Willow
15.	Citrus	(Species)
16.	Cupressus sempervirens 'Glauca'	Italian Cypress
17.	Eriobotrya japonica	Loquat (Japanese Plum)
18.	Fraxinus velutina	Arizona Ash
19.	Ginko biloba	Ginko (Maidenhair tree)
20.	Gleditsia triacanthos	Common Honey Locust
21.	Gleditsia triacanthos inermis	Thornless Honey Locust
22.	Ilex vomitoria	Yaupon Holly
23.	Juniperus scopulorum	Rocky Mountain Juniper
24.	Juniperus virginiana	Red Cedar
25.	Koelreuteria paniculata	Golden Rain Tree
26.	Lagerstroemia indica	Crape Myrtle
27.	Ligustrum lucidum	Japenese Ligustrum
28.	Liquidambar Styraciflua	American Sweet Gum
29.	Magnolia grandiflora	Southern Magnolia
30.	Melia Azedarach	Chinaberry
31.	Morus alba (Male)	Fruitless Mulberry
32.	Parkinsonia aculeata	Retama
33.	Phoenix canariensis	Canary Island Date Palm
34.	Pinus cembroides	Pinon Pine
35.	Pinus halepensis	Aleppo Pine
36.	Pinus thumbergiana	Japenese Black Pine
37.	Pistacia chinensis	Chinese Pistachio
38.	Platanus occidentalis glabrato	Texas Sycamore
39.	Populus deltoides	Cottonless Cottonwood
40.	Porsopis juliflora	Honey Mesquite
41.	Prunus cerasifera	Purple-leaf Plum
42.	Prunus persica	Common Peach
43.	Pyrus calleryana	Bradford (Callery) Pear
44.	Quercus macrocarpa	Burr Oak

45.	Quercus marilandica	Blackjack Oak
46.	Quercus nigra	Water Oak
47.	Quercus palustrus	Pin Oak
48.	Quercus phellos	Willow Oak
49.	Quercus rubra	Red Oak
50.	Quercus Shumardii	Shumard's Red Oak
51.	Quercus stellata	Post Oak
52.	Quercus texana	Texas Red Oak
53.	Quercus virginiana	Live Oak
54	Salix babylinica	Weeping Willow
55.	Sapium sebiferum	Chinese Tallow
56.	Taxodium distichum	Bald Cypress
57.	Ulmus americana	American Elm
58.	Washington robust	Mexican Fan Palm

SHRUBS

1.	Abelia grandiflora	Glossy Abelia
2.	Agave americana	Century Plant
3.	Acuba japonicavariegata	Gold Dust Plant
4.	Berberis Thunbergii	Japenese Barberry
5.	Buxus micropylla japonica	Japenese Boxwood
6.	Cleyera japonica	Cleyera
7.	Cortederia selloana	Pampas grass
8.	Cotoneaster glaucphyllus	Silverleaf Cotoneaster
9.	Dasylirion texanum	Texas Sotol
10.	Eleagnus macrophylla "Ebbengi"	Silverberry
11.	Eriobotrya japonica	Loquat
12.	Chamaerops humulis	Mediterranean Fan Palm
13.	Euonymus japonica	Evergreen Euonymus
14.	Euonymus japonica aureo-marginata	Gold-Edge Euonymus
15.	Euonymus japonica aureo-variegata	Goldspot Euonymus
16.	Fouquieria splendens	Ocotillo
17.	Hisbiscus rosa-sinensis	Chinese Hibiscus
18.	Hibiscus syriacus	Althea (Rose of Sharon)
19.	Ilex cornuta	Chinese Horned Holly
20.	Ilex cornuta cv. "Burfordii"	Burford Holly
21.	Ilex cornuta cv. "Rotunda"	Dwarf Chinese Holly
22.	Ilex vomitoria	Yaupon Holly
23.	Ilex vomitoria cv. "Nana"	Dwarf Yaupon Holly
24.	Juniperus chinensis "Pfitzerana"	Pfitzer Juniper
25.	Lagerstroemia indica	Crepe Myrtle
26.	Lantana Camara	Lantana
27.	Leucophyllum frutescens	Ceniza (Purple Sage)
28.	Ligustrum japonicum	Japanese Ligustrum
29.	Ligustrum lucidum	Waxleaf Ligustrum
30.	Myrica cerifera	Wax Myrtle

31.	Nandina domestica	Heavenly Bamboo (Nandina)
32.	Nerium oleander	Oleander
33.	Photinia Fraseri	Fraser's Photinia
34.	Photina glabra	Japanese Photinia
35.	Photina serrulata	Chinese Photinia
36.	Pittosporum tobira	Green Pittosporum
37.	Pittosporum tobira variegata	Variegated Pittosporum
38.	Pumbago auriculata	Blue Plumbago
39.	Podocarpus macrophyllus	Large Leaf Japanese Yew
40.	Podocarpus macrophyllus var. Makii	Small Leaf Japanese Yew
41.	Punica granarum	Pomegranate
42.	Pyrancantha coccinea	Pyrancantha
43.	Raphiolepis indica	Indian Hawthorne
44.	Rhododendron indicum	Indica Azalea
45.	Rhododendron hybrids	Kurume Azalea
46.	Rhus glabra	Smooth Sumac
47.	Rosmarinus officinalis	Rosemary
48.	Santolina chamaecyparissus	Santolina Gray
49.	Santolina virens	Santolina Green
50.	Sophora secundiflora	Texas Mountain Laurel
51.	Viburnum japonicum	Japanese Viburnum
52.	Wisteria floribunda	Wisteria Japanese
53.	Yucca aloifolia	Spanish Bayonet
54.	Yucca parviflora	Red Yucca

VINES AND GROUND COVER

1.	Agapanthus africanus	Lili-of-the-Nile
2.	Ajuga reptans	Carpet Bugle
3.	Aspidistra elatior	Cast Iron Plant
4.	Bifnonia radicans grandiflora	Yellow Trumpetvine
5.	Bougainvellea sp.	Bougainvillea
6.	Dichondra repens	Dichondra
7.	Euonymus fortunei "colorata"	Purpleleaf Wintercreeper
8.	Ficus pumila	Climbing Fig
9.	Gelsemium sempervirens	Carolina Jasmine
10.	Hedera helix	English Ivy
11.	Hemerocallis sp.	Daylily
12.	Lantana montevidensis	Trailing Lantana
13.	Lirope Muscari	Big Blue Lilyturf
14.	Lonicera japonica "Halliana"	Hall's Honeysuckle
15.	Lonicera semperivirens	Coral Honeysuckle
16.	Ophiopagon japonicus	Monkey or Mondo Grass
17.	Rosmarinus officinalis	Rosemary
18.	Sedum (varieties)	Stonecrop
19.	Trachelospermum asiaticum	Asian Jasmine
20.	Trachelospermum jasminoides	Star Jasmine

21.	Verbena peruviana	Garden Verbena
22.	Verbena pulchella	Sand Verbena
23.	Vinca major	Bigleaf Periwinkle
24.	Vinca minor	Littleleaf Periwinkle
25.	Wisteria (species)	Wisteria

VIII. REFERENCE MATERIAL LISTS

The following lists of reference materials are identified by secondary course.

In addition, a general reference list is provided to be used as supplemental references to those listed for the courses.

Instructional Materials Service
Agriscience 101 References

Catalog Number	Title
4906	Teacher's Key - AgSc 101
CG101	Curriculum Guide for AgSc 101
2101	Transparencies for AgSc 101
8350	Supply and Demand of Food and Fiber
8351	Renewable and Nonrenewable Agricultural Resources
8352	The Impact of Agriculture on World Economy
8353	Interdependency of Agriculture and Society
8354	Key Developments Shaping World Agriculture
8355	Key Developments Shaping US Agriculture
8356	Factors Affecting World Trade
8357	The Impact of Agriculture as a Political Tool
8358	Environmental Concerns in Agriculture
8359	Methods of Protecting the Environment
8360	The Effects of the Environment on Agriculture
8361	World Food Chain - From Production to Consumption
8362	World Fiber Chain - From Production to Consumption
8363	Impact of Research and Development in Ag Science and Technology
8364	Research and Development Techniques for Class and Laboratory
8365	Developing Professionalism and Ethics
8366	Using Proper Etiquette and Behavior
8367	Exploring Personal Relations
8368	Practicing Good Grooming and Health Habits
8369	Understanding Importance of Effective Communication - Spoken Word
8370	Understanding Importance of Effective Communication - Written Word
8371	Improving Communication Skills Through Organized Activities
8372	Utilizing the Media for Effective Communication - Public Relations
8373	Importance and Procedures of Keeping Accurate Records
8374	Importance and Use of Budgeting
8375	Importance and Procedures of Personal Finance
8376	Types of Supervised Agricultural Experience
8377	Characteristics of Successful Agricultural Programs
8378	Planning Supervised Agricultural Experience Programs

Instructional Materials Service
Agriscience 102 References

Catalog Number	Title
4907	Teacher's Key - AgSc 102
CG102	Curriculum Guide for AgSc 102
2102	AgSc 102 Transparencies
K102	Teacher's Key to Topic Tests for AgSc 102
T102	Topic Tests for AgSc 102
8380	Importance and Formation of Soils
8381	Soil Formations
8382	Components and Properties of Soil
8383	Soil Classification Systems
8384	Plant Structure and Functions of Plant Parts
8385	Plant Growth and Development: Seed Germination
8386	Plant Growth and Development: Production, Use, Storage of Food
8387	Plant Genetics
8388	Sexual and Asexual Reproduction of Plants
8389	Plant Breeding
8390	Plant Recognition: Classification and ID of Field Crop Plants
8391	Animal Growth and Development
8392	Anatomy and Physiology of Animals
8393	Breeds of Beef Cattle
8394	Breeds of Swine
8395	Breeds of Sheep
8396	Breeds of Dairy Cattle
8397	Classes, Breeds, and Varieties of Poultry
8398	Breeds of Horses
8399	Selecting Beef Cattle
8400	Selecting Swine
8401	Selecting Sheep
8402	Selecting Dairy Cattle
8403	Selecting Poultry
8404	Selecting Horses
8405	Animal Reproduction
8406	Animal Genetics
8407	Methods of Animal Breeding
8408	Importance of Food Science Technology
8409	Trends in Food Production
8410	Identifying Major Areas of Agricultural Mechanics
8411	Identifying Safety and Laboratory Procedures
8412	Performing Basic Skills in Agricultural Construction
8413	Identifying Lumber and Computing Bill of Materials
8414	Identifying and Using Fasteners
8415	Agricultural Chemicals and the Environment
8416	Proper Use of Agricultural Chemicals
8417	Alternative Energy Sources
8418	Energy Conservation
8419	Water Conservation

Instructional Materials Service
Agriscience 221 References

Catalog Number	Title
0116	Agricultural Mechanization Technical Information
2511	Agricultural Mechanization Transparencies
4629	Agricultural Mechanics: Fundamentals and Application
4908	Teacher's Key - AgSc 221
CG221	Curriculum Guide for AgSc 221
K221	Teacher's Key to Topic Tests for AgSc 221
T221	Topic Tests for AgSc 221
8412	Performing Basic Skills in Agricultural Construction - Tools
8413	Identifying Lumber & Computing Bill of Materials
8414	Identifying and Using Fasteners
8600	Agricultural Mechanics: Importance, Safety & Lab Management
8601-A	Identifying & Using Power Tools
8601-B	Measuring & Marking Devices
8602-A	Electrical Principles & Terminology
8602-B	Electrical Wiring
8603	Pipe, Plumbing, & Water Systems
8604-A	Estimating Materials Needed for Concrete
8604-B	Placing, Reinforcing, Finishing, & Curing Concrete
8605-A	Cost Effective Construction - Materials
8605-B	Cost Effective Construction - Plans
8606	Materials and Painting Techniques
8607	Fencing Materials & Construction
8608	Identifying, Cutting, Drilling, Shaping, & Filing Metal
8609-A	Oxyfuel Welding & Cutting
8609-B	Arc Welding - Introduction & Fundamentals
8609-C	Arc Welding - Basic Steps
8609-D	Arc Welding - Joints, Positions, Uses

Instructional Materials Service
Agriscience 261 References

Catalog Number	Title
0115A	Horticulture Leadership, Employment, Entrepreneurship, Careers
0115B	Horticulture Safety and Occupational Equipment Technical Information
0115C	Horticulture Exploratory Skills Technical Information
2361A	Horticulture-Leadership/Employment/Entreprenuership/Careers Transparencies
2361B	Horticulture Safety and Occupational Equipment Transparencies
2361C	Horticulture Exploratory Skills Transparencies
CG261	Curriculum Guide for 261

Instructional Materials Service
Agriscience 311 References

Catalog Number	Title
4773	Farm and Ranch Business Management
CG311	Curriculum Guide for AgSc 311
4914	Teacher's Key for AgSc 311
8706-A	Importance of Agriculture
8706-B	Management Roles & Functions
8706-C	Management Decision-Making
8706-D	Goals and Objectives
8707-A	Economic Systems
8707-B	Supply & Demand
8707-C	Production Economics: Maximizing Profits
8708-A	Income & Cost of Production
8708-B	Enterprise Budgets
8708-C	Total Budgeting
8708-D	Partial Budgeting
8709-A	Management Information Systems
8709-B	Accounting
8709-C	Balance Sheet
8709-D	Income Statement
8709-E	Cash Flow Statement
8709-F	Financial Statement Analysis
8709-G	Income Taxes and Social Security
8709-H	Production Records
8709-I	Depreciation
8710-A	Obtaining Capital Resources
8710-B	Importance & Types of Credit
8710-C	Agricultural Loan Institutions
8710-D	Computing Interest
8710-E	Types of Loans
8711-A	Business Legal Structures
8711-B	Agricultural Laws and Regulations
8711-C	Legal Documents
8712-A	Risk Management
8712-B	Types of Insurance
8713-A	Past Agricultural Policy
8713-B	Recent & Current Agricultural Policies
8714-A	Purpose and Importance of Marketing
8714-B	The Competitive Environment
8714-C	Domestic and International Marketing Factors
8714-D	Types of Agricultural Markets
8714-E	Marketing Alternatives for Production Agriculture
8714-F	Forward Contracting: Cash and Futures
8714-G	Effects of Government Programs
8715-A	Use & Selection of Computers - Agribusiness
8716-A	Employee Benefits
8716-B	Employer/Employee Relationships
8721-A	Management Roles and Functions
8721-B	Management Goals and Decision Making
8721-C	Managing Risk and Uncertainty
8722-A	Economic Systems, Money Price, and Government Policy
8722-B	Economics: Supply and Demand

Instructional Materials Service
Agriscience 312 References

Catalog Number	Title
CG312	Curriculum for AgSc 312
4915	Teacher's Key for AgSc 312
8736-A	Self Concept
8736-B	Social Skills
8736-C	Professional Image
8737-A	Leaders and Leadership
8737-B	Leadership Styles
8738-A	Personal Leadership Potential
8738-B	Basic Human Needs
8738-C	Motivation and Influence
8738-D	Preparing Resumes and Applications
8739-A	Job Interviews
8739-B	Employer Expectations
8739-C	Work Related Ethics
8739-D	Working with Co-Workers
8740-A	Job Applicants
8740-B	Evaluation of Employees
8740-C	Complaints and Appeals
8740-D	Employee Obligations
8740-E	Business Related Ethics
8741-A	The Communication Process
8741-B	Barriers to Communication
8741-C	Written Communication
8741-D	Verbal Communication
8741-E	Non Verbal Communication
8741-F	Listening
8741-G	Working with Diverse Groups
8741-H	Group Discussions
8741-I	Successful Meetings
8741-J	Friends and Friendship
8742-A	Organizing Groups
8742-B	Program of Activities
8742-C	Decision Making
8742-D	Problem Solving
8742-E	Personal Goals
8742-F	Time Management

Instructional Materials Service
Agriscience 362 References

Catalog Number	Title
0104	Landscaping Plant Classification
4330	Roses - Planting, Pruning, and Landscaping
4331	Texas Master Gardener Handbook
4332	Plants of the Metroplex III
4925	Teacher's Key for AgSc 362
CG362	Curriculum Guide for AgSc 362
8927-A	Recognizing Plant Characteristics Used to Classify, Name, and Identify Plants
8927-B	Classifying and Identifying Greenhouse and Nursery Plants
8928-A	Safety in Horticultural Plant Production
8929-A	Identifying, Maintaining, and Storing Tools and Equipment Used in Horticultural Plant Production
8930-A	Vegetative Plant Structures and Their Functions
8930-B	Reproductive Plant Structures and Their Functions
8930-C	Seed Germination
8930-D	Propagating Plants Asexually
8931-A	Selecting and Preparing Plant Growing Media
8931-B	Using Mulches and Compost
8931-C	Sterilizing Plant Growing Media
8931-D	Selecting and Growing Greenhouse Plants
8931-E	Selecting and Growing Nursery Plants
8931-F	Fertilizing Greenhouse and Nursery Plants
8931-G	Watering Greenhouse and Nursery Plants
8931-H	Managing Pests of Greenhouse and Nursery Plants
8932-A	Scheduling Greenhouse Potted Crops and Nursery Container Crops
8932-B	Marketing Techniques Related to Horticultural Plant Production
8933-A	Considerations for Locating and Building a Greenhouse or Nursery
8933-B	Selecting Structures Used for Propagating and Growing Greenhouse and Nursery Plants
8933-C	Selecting Equipment Required for Controlling the Environmental Conditions of Horticultural Plants
8933-D	Selecting Containers for Horticultural Crops
8933-E	Maintaining Structures and Equipment Used in Horticultural Plant Production
8934-A	Controlling the Environmental Conditions of Horticultural Plants
8934-B	Lighting and Shading Greenhouse and Nursery Plants

Instructional Materials Service
Agriscience 363 References

Catalog Number	Title
4327	Arranging Cut Flowers
4328	Principles of Floral Design
4329	Floral Designing and Arrangement
4926	Teacher's Key for AgSc 363
CG363	Curriculum Guide for AgSc 363
8943-A	Identifying Flowers and Foliage Used in Floral Designs
8943-B	Identifying Tropical Foliage Plants and Blooming Plants Used in Interior Landscape Development
8944-A	Techniques of Increasing Keeping Qualities of Flowers/Plants
8945-A	History of Floral Design
8946-A	Floral Design Principles
8946-B	Color Harmony in Floral and Interior Landscape Design
8947-A	Material Selection and Design Mechanics for Arranging Cut Flowers
8947-B	Preparing Symmetrical Arrangements with Fresh Cut Flowers
8947-C	Preparing Asymmetrical Arrangements with Fresh Cut Flowers
8947-D	Preparing Round Arrangements with Fresh Cut Flowers
8948-A	Material Selection and Design Mechanics for Arranging Dried and Everlasting Flowers
8948-B	Preparing Two-Dimensional Pressed Flower Pictures - Dry Flowers
8948-C	Preparing Three-Dimensional Arrangements With Silk and Dry Flowers
8949-A	Selecting Flowers, Foliage Materials, and Design Principles for Preparing Corsages and Boutonnieres
8949-B	Wiring Flowers and Foliage
8949-C	Constructing Bows
8949-D	Preparing Football Chrysanthemum Corsages
8949-E	Constructing Boutonnieres and Corsages
8950-A	Floral Designs for Holidays, Banquets, and Other Special Occasions
8951-A	Safety in Floral Design and Interior Landscaping
8953-A	Managing the Interior Landscape Environment
8953-B	Watering and Fertilizing Interior Plants
8953-C	Managing Pests and Diseases of Interior Plants
8953-D	Pruning Interior Landscape Plants
8954-A	Functional Uses of Interior Plants and Interior Landscape Design Principles
8954-B	Using Line, Form, Texture, and Color in Interior Landscape Development
8955-A	Designing Interior Landscapes for Commercial Mall Sites and for Small Commercial Clients
8956-A	Pricing Interior Landscaping Services

Horticulture References

Instructional Materials Service
Texas A&M University
F.E. Box 2588
College Station, Texas 77843
(409) 845 - 6601

Catalog Number	Title
0031A	Horticultural Occupations
0031B	Key - Horticultural Occupations
0102	Lab Exercises in Horticulture
0104	Landscape Plant Classification
0107	Propagating Horticulture Plants
0109	Greenhouse Operation and Management
0110	Ornamental and Nursery Plant Production
0113	CVAE-VEH Horticulture
0201	Basic Gardening Illustrated
0207	Lawns and Groundcovers
2358	Greenhouse Operation and Management (Transparencies)
2359	Ornamental and Nursery Plant Production (Transparencies)
2360	CVAE-VEH Horticulture (Transparencies)
2361-A	Horticultural Leadership/Employment/Entrepreneurship/ Careers Transparencies
2361-B	Horticulture Safety & Occupational Equipment Transparencies
2361-C	Horticulture Exploratory Skills Transparencies
4303	Applying Pesticides
4304	Fertilizing and Watering Shade and Ornamental Trees
4311	Selecting Trees for Home Planting
4312	Transplanting Shade Trees
4313	Pruning Fruit Trees
4314	Controlling Plant Growth
4316	Growing Plants Indoors
4319	Teacher's Guide - Applying Pesticides
4321	The Greenhouse Worker
4322	Samson's Tree Identifier
4324	Landscaping Illustrated
4325	Fresh Produce
4326	Vegetable Gardening Illustrated
4327	Arranging Cut Flowers
4328	Principles of Floral Design
4329	Floral Designing and Arrangement
4330	Roses - Planting and Care/Pruning/Landscaping
4331	Texas Master Gardener Handbook
4332	Plants of the Metroplex III
5312	1979 Pecan Propagation (Slides)
5313	1979 Greenhouse Management (Slides)
5315	1979 Plants for High School Greenhouse (Slides)
5316	1979 Propagation of Greenhouse Plants (Slides)
5320	1981 Greenhouse Crops (Slides)

Instructional Materials Service
Texas A&M University
F.E. Box 2588
College Station, Texas 77843
(409) 845 - 6601

Catalog Number	Title
5322	Common Vegetable and Household Insects (Slides)
5324	1981 Applying Pesticides Kit (Slides)
5327	1979 Nursery Plant Identification (Slides)
5328	1978 Air Layering (Slides)
5329	1980 Planting and Care of Hanging Baskets (Slides)
5330	1980 Planting, Protecting Existing Features, Drainage/Driveways (Slides)
5331	1980 Ground Covers and Their Uses (Slides)
5332	1980 Selecting Trees for Landscaping Use (Slides)
5334	1980 Pruning Evergreens (Slides)
5335	1980 Objectives of Pruning Deciduous Trees (Slides)
5336	1980 Mechanical Digging of Trees and Shrubs (Slides)
5337	1980 Hand Digging of Trees and Shrubs (Slides)
5338	1980 Walks, Steps, Retaining Walls - Landscaping (Slides)
5345	1980 State FFA Floriculture Contest (Slides)
5346	1980 State FFA Nursery/Landscape Contest (Slides)
5347	1984 State FFA Floriculture Contest (Slides)
5348	1984 State FFA Nursery/Landscape Contest (Slides)
5349	1987 State FFA Floriculture Contest (Slides)
5350	1987 State FFA Nursery/Landscape Contest (Slides)
5351	1990 State FFA Floriculture Contest
5352	1990 State FFA Nursery/Landscape Contest
6304	Identification of Weeds, Part I
6305	Identification of Weeds, Part II
6306	Fertilizing and Watering Shade and Ornamental Trees (Filmstrip)
6307	Garden Flowers, Annuals, Part I (Filmstrip)
6308	Garden Flowers, Annuals, Part II (Filmstrip)
6309	Foliage Plant Identification, Part I (Filmstrip)
6310	Foliage Plant Identification, Part II (Filmstrip)
6311	Foliage Plant Identification, Part III (Filmstrip)
6312	Greenhouse Uses and Design (Filmstrip)
7022	Nursery/Landscape Plant Identification (5" x 7") (Flash Cards)
8320	Ornamental Horticulture Skill Sheets, Set No. 1
8321	Ornamental Horticulture Skill Sheets, Set No. 2
9106	Apple II Plus - Horticulture Review (Computer Program)
9143	Apple II Plus - Sexual Plant Propagation (Computer Program)
9144	IBM-PC - Sexual Plant Propagation (Computer Program)
9166	Apple - Agri ID - The Leaf (Computer Program)
9167	Apple - Agri ID - The Plant (Computer Program)
9179	Apple II+/E/C - Asexual Plant Propagation (Computer Program)
9607	Basic Landscaping (VHS Video)
9608	Underground Sprinkler Systems (VHS Video)

Instructional Materials Service
Texas A&M University
F.E. Box 2588
College Station, Texas 77843
(409) 845 - 6601

Catalog Number	Title
9609	Floral Design (VHS Video)
9678	Growing Beautiful Lawns (VHS Video)
9679	Growing Beautiful Roses (VHS Video)
9687	Caring for Your Lawn (VHS Video)
9694	Wedding and Anniversary Flowers (VHS Video)
9695	Formal and Informal Flowers (VHS Video)
9696	Flower Arranging for the Home (VHS Video)
9697	Holiday Wreath and Floral Design (VHS Video)
9698	Design, Soil Preparation and Planting (VHS Video)
9699	Lawn Installation and Maintenance
9700	Pruning and Plant Care (VHS Video)
9701	Low Maintenance Landscapes (VHS Video)
9702	Selecting Fruit and Shade Trees
9747	Field Trip/The Greenhouse

* * *

MAVCC - Mid-America Vocational
Curriculum Consortium
Occupational Curriculum Lab
East Texas State University
Commerce, Texas 75428
(214) 886 - 5624

301701	Landscape Management Field Operator Teacher's Guide
301702	Landscape Management Field Operator Student Manual
301703	Landscape Management Field Operator Transparency Set
301801	Landscape Management Field Specialist Teacher's Guide
301802	Landscape Management Field Specialist Student Manual
301803	Landscape Management Field Specialist Transparency Set
301901	Landscape Management Field Supervisor Teacher's Guide
301902	Landscape Management Field Supervisor Student Manual
301903	Landscape Management Field Supervisor Transparency Set

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Curriculum Publications Clearinghouse
Western Illinois University
Harrabin Hall 46
Macomb, Illinois 61455

108	Competency Based Curriculum Guide in High School Horticulture
177	Competency Based Horticulture
342b	Education for Employment Task Analysis for Agricultural Occupations - Horticulture
326b	Education for Employment Task Lists - Horticulture Cluster

V-Tech Catalogs

V-97	Crop Production: Vegetable Grower
V-154	Floriculture Worker, Retail Flower Shop Salesperson, and Floral Designer
V-92	Garden Center Salesperson, Garden Center Worker, Landscape Worker, and Landscape Designer
V-25	Gardening/Groundskeeping
V-40	Nursery Production
V-156	Ornamental Horticulture Production Occupations
V-56	Turfgrass Maintenance Workers
V-96	Crop Production: Orchardist

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Hobar Publications
1234 Tiller Lane
St. Paul, Minnesota 55112
(612) 633 - 3170

Computer Programs

AP2 - AG70 II+,IIe,IIc   Horticulture and Related Review
AP2 - AG70 - 3.5 IIGS
IBM - AG70 IBM PC MS-DOS
IBM - AG70 - 3.5 IBM PC
TRS - AG70 TRS 80 III,4
MAC - AG70

AP2 - AG73 II+,IIe,IIc   Introductory Horticulture Review I
AP2 - AG73 - 3.5 IIGS
IBM - AG73 IBM PC MS-DOS
IBM - AG73 - 3.5 IBM PC
TRS - AG73 TRS 80 III,4
MAC - AG73

AP2 - AG74 II+,IIe,IIc   Introductory Horticulture Review II
AP2 - AG74 - 3.5 IIGS
IBM - AG74 IBM PC MS-DOS
IBM - AG74 - 3.5 IBM PC
TRS - AG74 TRS 80 III,4
MAC - AG74

AP2 - AG75 II+,IIe,IIc   Introductory Horticulture Review III
AP2 - AG75 - 3.5 IIGS
IBM - AG75 IBM PC MS-DOS
IBM - AG75 - 3.5 IBM PC
TRS - AG75 TRS 80 III,4
MAC - AG75

AP2 - AG73 II+,IIe,IIc   Plant Nutrients, Fertilizers, and Related Review
AP2 - AG73 - 3.5 IIGS
IBM - AG73 IBM PC MS-DOS
IBM - AG73 - 3.5 IBM PC
TRS - AG73 TRS 80 III,4
MAC - AG73

AP2 - AG73 II+,IIe,IIc   Soil Evaluation, Fertility, and Related Review
AP2 - AG73 - 3.5 IIGS
IBM - AG73 IBM PC MS-DOS
IBM - AG73 - 3.5 IBM PC
TRS - AG73 TRS 80 III,4
MAC - AG73

Hobar Publications
1234 Tiller Lane
St. Paul, Minnesota 55112
(612) 633 - 3170

55472	Apple IIe	Ortho's Computerized Gardening
24533	Apple IIc	
35144	IBM PC	
27258	Commodore 64	

VHS Videos

15400767	Strawberry Production: Introduction and Growing Technology
15400768	Strawberry Production: Growing Technology from Field to Market
15400865	Both of the Above
15400771	Tomato Production: Pest Control
15400772	Tomato Production: Harvesting and Handling
15400866	Both of the Above
H-75032	Transplanting a Tomato
H-VT1029	Roses
H-VT1031	Ground Covers
H-VT1027	Lawn Care
H-75114	Master Gardener Program
H-VT1026	Vegetable Gardening
H-VT1032	Basic Gardening
H-75374	Grafting Apple Trees
H-VT1106	Pruning
H-VT1081	Indoor Plants
H-VT1028	Annuals and Hanging Baskets
H-FA-1002	Flower Arranging: Advanced Centerpieces, One-Sided and Layered "Mass" Designs
H-FA-1005	Flower Arranging: Basic Christmas Designs - Nosegays and Centerpieces
H-FA-1006	Flower Arranging: Christmas Designs - Wreaths, Wall Hangings, and Novelty Arrangement
H-FA-1004	Flower Arranging: Miniatures, Stylized (Sculptured) and Oriental Designs
H-FA-1001	Flower Arranging: Nosegays, One-Sided and Centerpiece Designs
H-FA-1003	Wall Hangings

Texts and Other References

0382-6	Ball RedBook
029538-8	American Style Flower Arranging
043935-5	Arboriculture
394809-9	Horticulture: Principles and Practical Application
7887-7	Lab Manual for Turfgrass Management
521667-2	Landscape Design
5771-3	Practical Horticulture
G-95201	Greenhouse Gardening

Hobar Publications
1234 Tiller Lane
St. Paul, Minnesota 55112
(612) 633 - 3170

G-95202	Greenhouse Gardening - Teacher's Guide
9512	Mathematics for Horticulture
9513	Mathematics for Horticulture - Teacher's Guide
711-722	Horticultural Competency Worksheets
978	Competency Based Horticulture
725-736	Nursery Worksheets
701-708	Horticultural Tool Maintenance Worksheets
UPC 05506	All About Vegetables
UPC 05255	All About Annuals
UPC 05273	All About Perennials
UPC 05335	All About Roses
UPC 05285	All About Pruning
UPC 05302	All About Lawns
UPC 05535	All About Growing Fruits and Berries
UPC 05223	All About Houseplants
UPC 05320	How to Select and Care for Shrubs and Hedges
UPC 05315	All About Landscaping
UPC 05280	All About Ground Covers
UPC 05258	All About Bulbs
UPC 05933	How to Select, Use, and Maintain Garden Equipment

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Teaching Aids Inc.
P.O. Box 1798
Costa Mesa, California 92628-7098

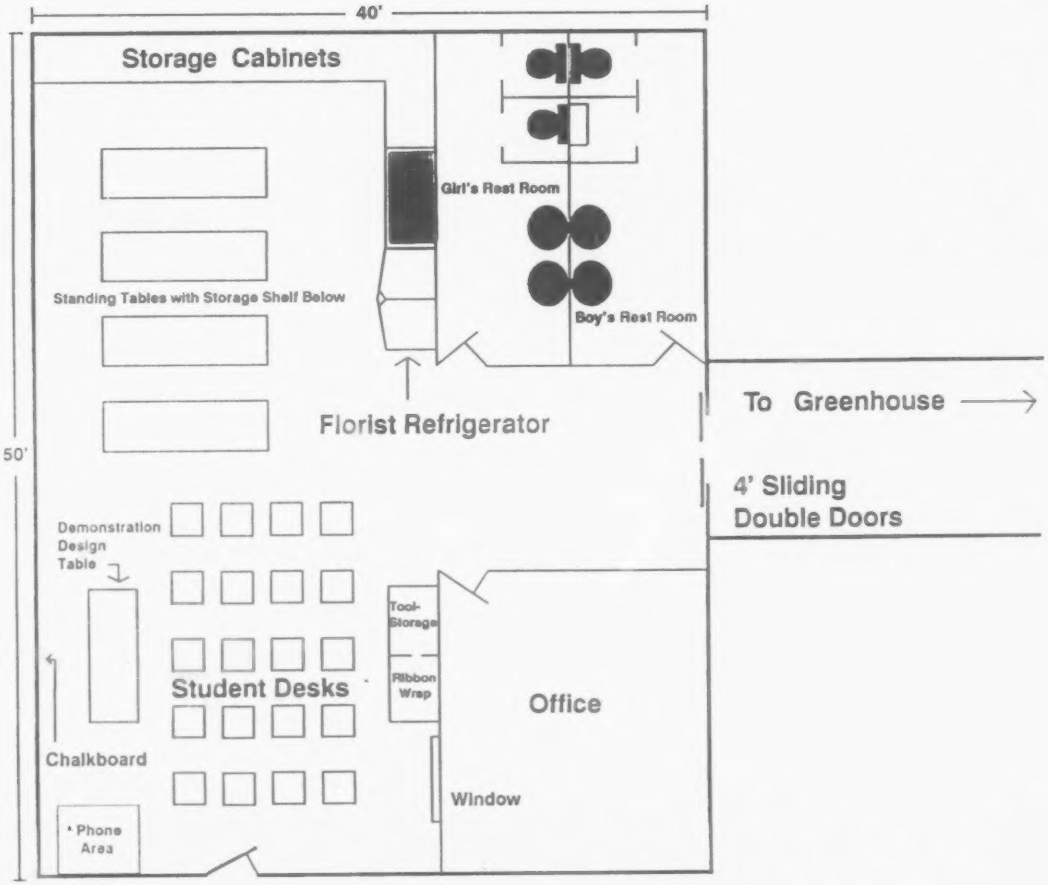
R-VT1039	Flower Arranging Made Simple, Part 1: Basics of Arranging (VHS Video)
R-VT1040	Flower Arranging Made Simple, Part 2: Materials Selection and Arrangement Styles (VHS Video)

IX. LINE DRAWING OF RECOMMENDED SECONDARY FACILITY

The following is a line drawing of the recommended classroom and greenhouse facilities for the 2 + 2 program in garden center management.

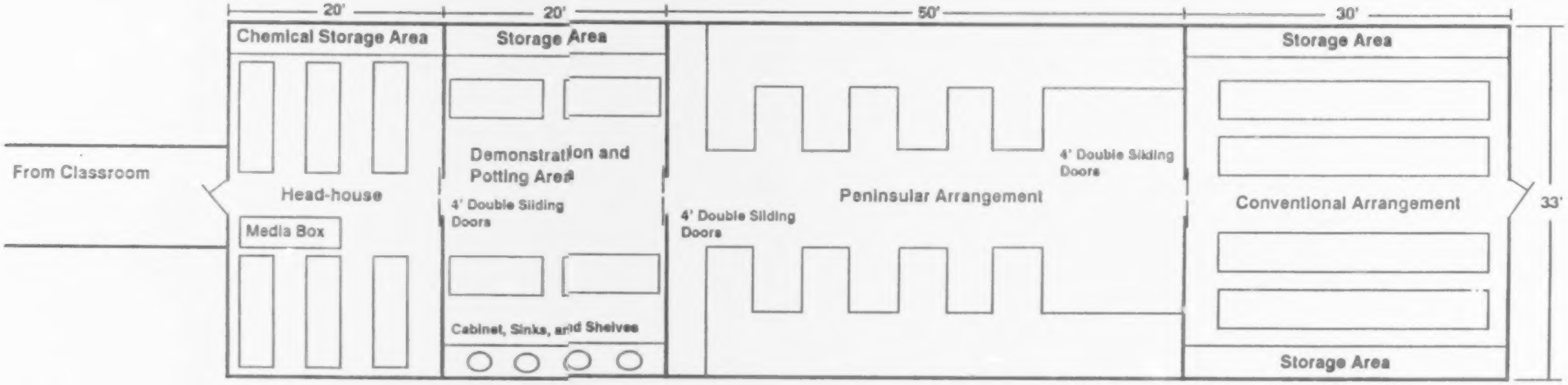
RECOMMENDED SECONDARY FACILITIES FOR HORTICULTURAL MANAGEMENT TRAINING

Scale: 1/4" = 2'



RECOMMENDED SECONDARY FACILITIES FOR HORTICULTURAL MANAGEMENT TRAINING - CONTINUED

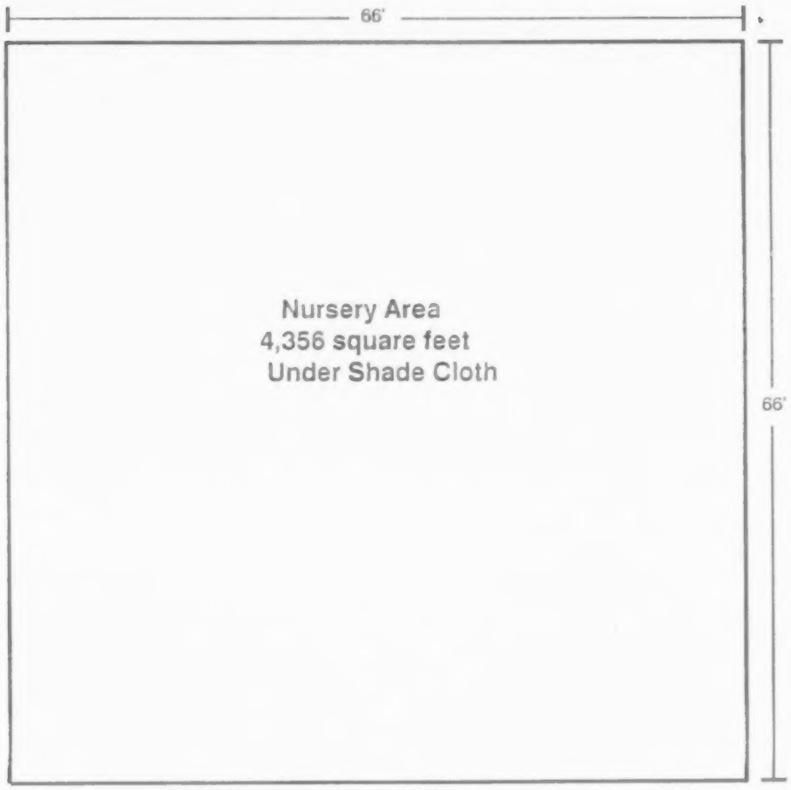
Scale: 1/4" = 3'

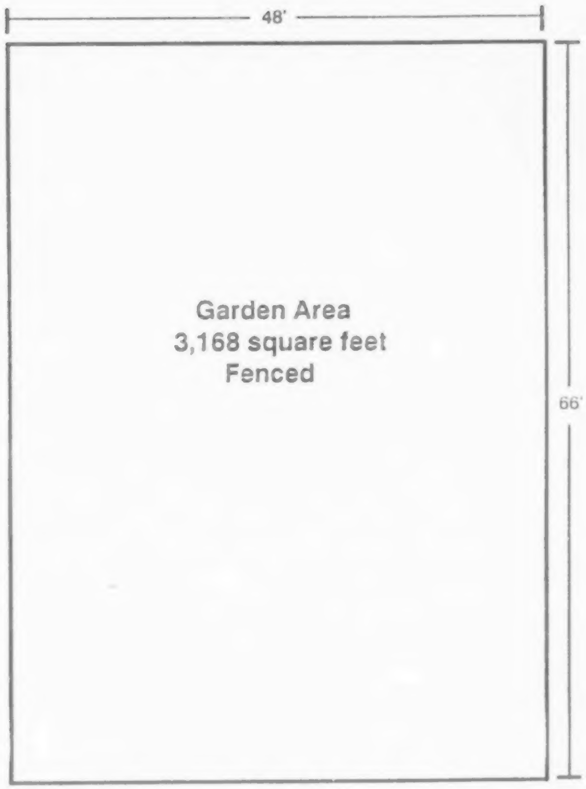


Garden and Nursery Area

RECOMMENDED SECONDARY FACILITIES FOR HORTICULTURAL MANAGEMENT TRAINING - CONTINUED

Scale: 1/4" = 3'





X. LIST OF RECOMMENDED TOOLS AND EQUIPMENT

The following is a list of recommended tools and equipment to be used at the secondary level in the teaching of the skills necessary for a student to succeed in the agricultural 2+2 program.

The estimated prices used to determine costs were obtained from tool and equipment supply catalogs and local hardware and lumber companies.

Tools and Equipment

The following hand tool and equipment list specifies the recommended quantities of each tool needed to teach a class of twenty students, and this is the number that a school should purchase when initiating a 2+2 Agricultural Technologies Program for Garden Center Management.

ITEM	RECOMMENDED QUANTITY	COST PER UNIT	TOTAL COST
Growing benches, includes hanging	Varies with size	.65-.80/ft^2	Varies
Work benches for head house	1	$ 517.00	$ 517.00
Potting benches, mobile	1	$ 763.00	$ 763.00
Heating Pads, w/controls	2	$ 219.00	$ 438.00
Carry-all, garden center and greenhouse cart, box 22 1/2" x 40"	2	$ 329.00	$ 658.00
Two wheel dolly	1	$ 19.99	$ 19.99
Walk-in cooler, dimensions 8' x 8' x 7' Temperature range 35-65 degrees F	1		
Satin cloth	Varies with size	.25/ft^2	Varies
Shade cloth	Varies with size	.12-.16/ft^2	Varies
Fan, jet ventilation system w/controls	1	Varies	Varies
Fan, wall boxes with automatic shutters w/automatic controls	2	$ 158.40	$ 316.80
Mist system, including nozzles and automatic controls	1	$ 595.00	$ 595.00
Grotron Controller	1	$ 179.95	$ 179.95
Pipe distribution system and return for pad system, including pad frames, pump, pads, complete	1	Varies	Varies
Pump, suction, complete (pump, centrifugal or submersible, 1/3-1/2 hp)	Varies with size	$ 92.28	Varies
Water tank - 50 gal	Varies with size	$ 49.95	Varies

ITEM	RECOMMENDED QUANTITY	COST PER UNIT	TOTAL COST
Fertilizer injector	2	$ 85.10	$ 170.20
Hozon fertilizer	12	$ 59.95	$ 719.40
Water hose, 5/8" x 50'	4	$ 14.95	$ 59.80
Heaters, gas-fired, force draft w/deflector kits and automatic controls	Varies with size	Varies	Varies
Thermometer, maximum-minimum	6	$ 20.85	$ 125.10
Refrigerator, household type, 6-8' capacity	1	$ 250.00	$ 250.00
Soil sterilizer, 1/2 yd. capacity	1	$ 849.00	$ 849.00
Program timer, for mist and photo control	4	$ 52.50	$ 210.00
Auger bits, 1/4" to 1" by 16ths (set)	1	$ 93.20	$ 93.20
Miter box, 4" x 24", w/11 pt. saw	1	$ 66.88	$ 66.88
Bit braces, reversible ratchet, 10" sweep	2	$ 73.65	$ 147.30
Water breakers, assorted w/handles	12	$ 7.48	$ 89.76
Cold chisels, set, 1/4", 1/2", 3/4"	2	$ 33.63	$ 67.26
Wood chisels, set, 1/4", 1/2", 3/4"	2	$ 32.23	$ 64.46
Gasoline containers, safety, 5 gal. capacity w/funnel	1	$ 43.55	$ 43.55
Oil can spout	2	$ 10.10	$ 20.20
Extension cord, 100' with GFCI	2	$ 74.40	$ 148.80
Can cutter shears	2	$ 6.90	$ 13.80
Graduated cylinders, glass liquid measurement, 8 oz. capacity w/1/8 oz. increments	6	$ 15.20	$ 91.20
Architect scale	20	$ 13.95	$ 279.00

ITEM	RECOMMENDED QUANTITY	COST PER UNIT	TOTAL COST
Drafting board	20	$ 64.00	$ 1280.00
Mechanical drawing set	20	$ 30.60	$ 612.00
Triangle, 30 - 60 degrees	20	$ 3.45	$ 69.00
Triangle, 45 - 90 degrees	20	$ 4.25	$ 85.00
T-square	20	$ 17.95	$ 359.00
Twist drills, high speed, straight shank, 1/16" to 1/2" by 64ths (set)	1	$ 24.99	$ 24.99
Duster, manual operated	1	$ 142.14	$ 142.14
Edger, gas, 3 1/2 to 4 hp	1	$ 259.88	$ 259.88
Flat file, 10"	1	$ 5.39	$ 5.39
Flat file, 12"	1	$ 7.38	$ 7.38
Half-round file, 10"	1	$ 8.39	$ 8.39
Half-round file, 12"	1	$ 9.59	$ 9.59
Mill file, 10"	2	$ 4.39	$ 8.78
Rattail file, 10"	2	$ 7.89	$ 15.78
Electric fogger, 360 degrees oscillator	1	$ 995.00	$ 995.00
Safety goggles	25	$ 6.89	$ 172.25
Bench grinder, 1/2 hp electric motor w/7" wheels	1	$ 120.80	$ 120.80
Ball pein hammer, 8 oz.	2	$ 9.49	$ 18.98
Nail hammer, bell faced, curved claw,16 oz	6	$ 19.06	$ 114.36
Sledge hammer, 8 lb.	2	$ 13.77	$ 27.54
Hot water heater, electric or gas, 30 gal.	1	$ 642.53	$ 642.53

ITEM	RECOMMENDED QUANTITY	COST PER UNIT	TOTAL COST
Salamander, for emergency heating	1	$ 2010.00	$ 2010.00
Garden hoes	8	$ 12.84	$ 102.72
Mattock hoes	2	$ 17.99	$ 35.98
First aid kits	1	$ 24.95	$ 24.95
Emergency eye-wash station	1	$ 130.00	$ 130.00
Soluble salt testing kit, soil and water	1	$ 27.00	$ 27.00
Complete soil testing kit	1	$ 727.00	$ 727.00
Budding and grafting knives	20	$ 14.95	$ 299.00
Extension ladder, 30'	1	$ 249.99	$ 249.99
Steo ladder, wood 8' or 12'	1	$ 70.50	$ 70.50
Rotary lawnmower,20", 3 1/2 to 4 hp	2	$ 227.62	$ 455.24
Farm level set (tripod, target, and rod)	1	$ 533.00	$ 533.00
Gas mask w/face mask	2	$	
Light meter	1	$ 65.00	$ 65.00
Moisture meter	1	$ 38.25	$ 38.25
pH meter	1	Included in the soil test kit	
Concrete mixer, 3-4 ft^3 capacity, w/1/2 hp electric motor or gasoline	1	$ 1492.50	$ 1492.50
Combination pliers, slip joint, 8"	2	$ 8.49	$ 16.98
End Cutting pliers, 6"	1	$ 13.99	$ 13.99
Lineman's pliers, 8"	1	$ 15.27	$ 15.27
Tomato pollinator, vibrator type, electric motor or battery powered	1	$ 119.95	$ 119.95

ITEM	RECOMMENDED QUANTITY	COST PER UNIT	TOTAL COST
Soil sampler probe	4	$ 77.00	$ 308.00
Garden rakes, assorted	4	$ 14.49	$ 57.96
Wood rasp, 10" half-round	2	$ 7.99	$ 7.99
Wood rules, zig-zag, 6"	6	$ 15.30	$ 91.80
Bow saw, tubular steel frame, tapered point, 21" blade	2	$ 15.30	$ 30.60
Hack saw, adjustable, 10" to 12" frame	1	$ 7.49	$ 7.49
Hand saw, crosscut, 8 point	4	$ 14.16	$ 56.64
Hand saw, rip, 5 1/2 point	1	$ 14.16	$ 14.16
Pole saw	2	$ 41.94	$ 83.88
Pruning saw	2	$ 16.95	$ 33.90
Utility scales, 25 lb. capacity minimum, 2 oz graduation	1	$ 160.00	$ 160.00
Assorted screwdrivers	12	$ 5.80	$ 69.60
Vibrator seeder	8	$ 19.75	$ 158.00
Pruning shears, hand	6	$ 6.99	$ 41.94
Pruning shears, hedge	4	$ 10.99	$ 43.96
Pruning shears, lopping	2	$ 14.99	$ 29.98
"D" handle shovel	2	$ 10.95	$ 21.90
Round point shovel	4	$ 9.95	$ 39.80
Grain scoop	1	$ 27.24	$ 27.24
Sharp shooter	4	$ 16.11	$ 64.44
Soil shredder, w/ electric motor, 2 hp. or gasoline motor	1	$ 1524.91	$ 1524.91

ITEM	RECOMMENDED QUANTITY	COST PER UNIT	TOTAL COST
Sink, 20 gal capacity, smooth non-porous polystone or similar materials, 1 1/2" drain, dimensions 22 3/4" x 21 1/2" x 31 3/4 "	1	$ 39.95	$ 39.95
Sprayer for water hose, quart size	1	$ 9.95	$ 9.95
Sprayer, 3 gallon capacity, stainless steel	1	$ 32.66	$ 32.66
Sprayer, 30 gal capacity, fiberglass or coated-on epoxy lined tank, 3 1/2 hp piston type, 18" brass spray gun, 25' high pressure hose, assorted orifice discs, wheel barrow mounted and semi-pneumatic tires	1	$ 649.00	$ 649.00
Lawn sprinkler	2	$ 16.49	$ 16.49
Water system sprinkler, overhead impulse, portable	1	$ 279.95	$ 279.95
Combination oil stone	1	$ 10.95	$ 10.95
Carpenter's square, w/roofing table	2	$ 12.00	$ 24.00
Combination try and miter square, 9" protractor head and 1 centering head	2	$ 74.40	$ 74.40
Spray suit	3	$ 41.45	$ 124.35
Rubber boots (pairs)	4	$ 16.99	$ 67.96
Steel tape, 10'	1	$ 7.37	$ 7.37
Steel tape, 100'	1	$ 14.37	$ 14.37
Soil thermometer, w/8" probe	1	$ 28.10	$ 28.10
Atmosphere thermometer (greenhouse)	1	$ 4.99	$ 4.99
Rotary tiller, 18" width and 12" depth	1	$ 448.71	$ 448.71
Garden trowels, assorted	6	$ 2.50	$ 15.00
Mechanic's vise, solid base, w/3 1/2" jaws	1	$ 125.11	$ 125.11

ITEM	RECOMMENDED QUANTITY	COST PER UNIT	TOTAL COST
Weedeater, electric or gas, heavy duty	1	$ 99.88	$ 99.88
Wheel barrow, pneumatic tire, 6 ft^3	4	$ 105.90	$ 423.60
Adjustable wrenches, set, 6",8",10"	1	$ 36.62	$ 36.62
Combination wrenches, set, 3/8",7/16", 1/2",and 9/16"	1	$ 27.10	$ 27.10
Pipe wrenches, set 10" and 12"	4	$ 36.94	$ 147.76
Setscrew wrenches, short arm set	2	$ 2.60	$ 5.20
Setscrew wrenches, long arm set	2	$ 2.60	$ 5.20
Drill, electric, or cordless, 3/8" variable speed, reversible	1	$ 114.24	$ 114.24
Plumbing Package	1	Varies	Varies
Automatic watering system	1	$ 989.00	$ 989.00
Watering can w/rose head and spout extension	6	$ 21.18	$ 127.08

SUPPLIES AND EQUIPMENT THAT MAY BE NEEDED FOR TEACHING THE 2+2 AGRISCIENCE TECHNOLOGY PROGRAM IN GARDEN CENTER MANAGEMENT

In addition to the tools and equipment previously listed, the supplies and equipment listed below are necessary to develop skills and competencies needed by students.

Rubber Aprons (For application of chemicals)
Clay pot Containers
Flats, wood and/or plastic
Peat pots, assorted
Plastic pots, assorted
Metal pots, assorted
Fertilizer
Fungicides
Insecticides
Rubber Gloves (For the application of chemicals)
Gravel (Growing media)
Peat Moss
Propagating media (organic and inorganic)
Sand
Growth hormones
Pot labels 4-12"
Tree and Shrub Labels
Ornamental plants
Nursery plants
Seeds
Bulbs
Root Stocks
Garden Stakes, 12"-24"
Various Horticultural Catalogs and Magazines

Visual Aids Equipment:

16mm movie projector
35 mm film strip - slide projector
Nonreflective screen for overhead projector
Reflective screen for movie projector
35mm camera
Video tape equipment - recording and playing
Computers (8)
Overhead projector
Video camcorder

XI. COMPETENCY PROFILE

The following competency profile will be completed at the secondary level for those competencies achieved by the student during grades 11 - 12.

The profile will then be sent to the postsecondary institution where it will be updated as the student progresses.

Upon graduation from the postsecondary institution, a copy of the profile will have the college seal affixed, and will be provided to the student for presentation to a proposed employer.

COMPETENCY PROFILE

Secondary School ____________________ **Postsecondary School** ____________________

Agriculture 2+2 Program Area - Garden Center Management **Career Goal** ____________________

Name ____________________ **Social Security Number** ____________ **Age** ______

Address ______________________________ **Date of Birth** ____________

Phone Number ____________________ **Sex** ______ **Racial/Ethnic Designation** ____________

Parent's Name ______________________________ **Phone Number** ____________

Secondary Agriculture Courses Completed

Name of Course	Date Completed Month	Day	Year
AGSC 101 Introduction to World Agricultural Science and Technology			
AGSC 102 Applied Agricultural Science and Technology			
AGSC 221 Introduction to Agricultural Mechanics			
AGSC 261 Introduction to Horticultural Sciences			
AGSC 311 Agribusiness Management and Marketing			
AGSC 312 Personal Skill Development in Agriculture			
AGSC 361 Landscape Design, Construction, and Maintenance (Optional)			
AGSC 362 Horticultural Plant Production			
AGSC 461 Horticulture Pre-Employment Laboratory			
AGSC 363 Floral Design and Interior Landscape Development			
AGSC 364 Fruit, Nut, and Vegetable Production (Optional)			

Postsecondary Agriculture Courses Completed

Name Of Course	Date Completed Month	Day	Year
AGRI 1101 Introduction to Agriculture			
HORT 1307 Soils and Fertilizers			
HORT 1308 Plant Physiology and Diseases			
HORT 1312 Plant Propagation			
HORT 2302 Pests and Pesticides			
HORT 2305 Fruit and Vegetable Production			
HORT 2308 Greenhouse Crop Production			
HORT 2315 Plant Identification II - Herbaceous and Exotic Plants			
HORT 2317 Managing Agricultural Businesses			
HORT 2350 Horticulture Cooperative Training			

COMMENTS: ____

____

____

____

____

Directions: Evaluate the student using the rating scale below. Check the appropriate number to indicate the degree of competency. The rating for each of the tasks should reflect job readiness.

Rating Scale:
4 Skilled - can work independently with no supervision
3 Moderately Skilled - can perform job completely with limited supervision
2 Limited Skill - requires instruction and close supervision
1 No Exposure - no experience or knowledge in this area

A. PERFORM SALES DUTIES

4	3	2	1	
				1. Present sales information to customer
				2. Compute sales tax
				3. Identify common lawn and garden insects
				4. Complete sales slip
				5. Compute sales tax
				6. Prepare sales invoice
				7. Identify plant diseases
				8. Suggest procedures for weed, insect, and disease control
				9. Suggest care of plants for customers
				10. Determine customer needs
				11. Provide customers with technical assistance
				12. Recommend plant maintenance procedures
				13. Process telephone orders

B. PREPARE SOIL AND GROWING MEDIA

4	3	2	1	
				1. Shred planting material
				2. Screen planting material
				3. Mix media materials
				4. Pasteurize prepared media with steam
				5. Pasteurize growing media with chemicals
				6. Mix fertilizers into media
				7. Prepare seedbed
				8. Level or smooth planting area
				9. Mark off location of beds
				10. Shape or form beds
				11. Mark off planting spaces with bedwire

C. PROPAGATING PLANTS, SEEDS, AND CUTTINGS

4	3	2	1	
				1. Plan planting schedules
				2. Clean seed
				3. Plant seeds in flats or growing benches
				4. Plant seed using a precision small seed type planter
				5. Plant bulbs
				6. Transplant seedlings
				7. Treat bulbs to control fungus
				8. Prepare plants and cuttings for propagation
				9. Take cuttings
				10. Stick cuttings
				11. Label plants
				12. Transplant trees and shrubs
				13. Provide winterization of plants
				14. Select seed varieties
				15. Transplant cuttings
				16. Apply rooting hormone

D. CONTROLLING THE PLANT ENVIRONMENT

4	3	2	1	
				1. Control light requirements by using shade cloth
				2. Control temperature by setting thermostat
				3. Cultivate plants
				4. Water plants and nursery stock
				5. Apply mulches

E. APPLYING FERTILIZER AND CHEMICALS

4	3	2	1	
				1. Calculate fertilizer requirements
				2. Calculate pesticide concentrations
				3. Calculate fertilizer concentrations
				4. Calibrate fertilizer application equipment
				5. Collect soil samples
				6. Test soil sample
				7. Mix chemicals
				8. Apply chemicals
				9. Apply dry fertilizer
				10. Apply liquid fertilizer
				11. Apply dry chemicals to control weeds
				12. Apply liquid chemicals to control weeds
				13. Apply fertilizer with centrifugal /cyclone spreader
				14. Dispose of chemicals and container properly
				15. Properly fog buildings and other areas

F. HARVESTING PLANTS, SEEDS, AND CUTTINGS

4	3	2	1	
				1. Grade plants
				2. Count and bunch flowers
				3. Remove saleable plants from beds or benches
				4. Remove bedwire or fibered plastic from harvested areas
				5. Label harvested plants by common name

G. STORE, SHIP, AND TAKE INVENTORY

4	3	2	1	
				1. Bundle Plants
				2. Wrap plants
				3. Pack plants
				4. Bunch plants
				5. Pack shrubs
				6. Check received merchandise against invoice listings
				7. Keep current inventory of products for sale
				8. Package orders for shipment
				9. Prepare invoices and shipping labels
				10. Place plant materials in storage
				11. Assemble shipping cartons
				12. Store received supplies
				13. Inventory plants
				14. Load trucks and trailers for drop shipment
				15. Conduct inventory at the end of the physical period
				16. Store received plant material
				17. Store stock and supplies
				18. Receive and unpack cut flowers, floral products, and merchandise
				19. Keep an inventory of plants, equipment, and supplies

H. MANAGING THE BUSINESS

4	3	2	1	
				1. Maintain business records
				2. Prepare financial statements
				3. Interpret financial statements
				4. Complete the business loan application process
				5. Develop credit plan
				6. Prepare budget
				7. Prepare tax statements
				8. Prepare depreciation schedule
				9. Calculate net worth
				10. Orient new employees
				11. Plan work schedules
				12. Determine labor needs
				13. Train workers using demonstration performance method
				14. Evaluate employee performance
				15. Prepare reports
				16. Develop marketing plan
				17. Maintain inventory records
				18. Select computer software for records and reports
				19. Conduct inventory of merchandise
				20. Conduct periodic inspection of merchandise

I. APPLYING SAFETY PRACTICES

4	3	2	1	
				1. Apply basic emergency first aid techniques
				2. Use fire extinguisher
				3. Administer cardio-pulmonary resusitation (CPR)

J. PERFORM SALES-RELATED DUTIES

4	3	2	1	
				1. Design and letter show cards
				2. Package customer purchase
				3. Process cash sales transaction
				4. Process charge card sales transaction
				5. Gift wrap purchases
				6. Label and price products
				7. Update prices on merchandise
				8. Maintain customer file system and accounts
				9. Prepare advertisements

K. SERVICING AND MAINTAINING EQUIPMENT AND FACILITIES

4	3	2	1	
				1. Servicing business vehicle
				2. Service small four cycle and two cycle engines
				3. Sharpen hand tools
				4. Service sprinkler systems by replacing valves and gaskets
				5. Replace greenhouse fan
				6. Clean sprayers
				7. Install sprinkler heads, nozzles, and other irrigation equipment
				8. Clean work area
				9. Service electrical outlets and extensions
				10. Lubricate moving parts of equipment
				11. Lubricate chassis of garden equipment
				12. Service or replace ventilation system
				13. Troubleshoot electrical wiring and equipment
				14. Calibrate equipment
				15. Establish and maintain service records
				16. Order repair parts for equipment
				17. Perform routine maintenance and repairs
				18. Prepare equipment for off-season storage
				19. Clean and fumigate storage facility

L. PERFORMING GENERAL OFFICE WORK

4	3	2	1	
				1. Process telephone calls
				2. File materials
				3. Process mail
				4. Maintain mailing list
				5. Schedule appointments and meetings
				6. Order supplies and equipment
				7. Process incoming orders
				8. Process outgoing deliveries
				9. Process wire orders
				10. Clean work area
				11. Repair minor malfunctions of office equipment

M. DESIGNING LANDSCAPES

4	3	2	1	
				1. Follow a landscape plan installing plants
				2. Set stones
				3. Install ground covers
				4. Transplant trees and shrubs
				5. Price landscape design
				6. Seed lawns or sod

XII. STUDENT MONITORING AND FOLLOW-UP

The following student monitoring and follow-up instrument is the one that will be used to monitor and follow the student one year after graduation from the postsecondary institution.

At the present time, the 2 + 2 User's Group is considering adopting an instrument to be used for all 2+2 programs. At the time of this report that has not taken place.

Northeast Texas Community College
Project LONESTAR
Statistical Information Request

What is your **primary** reason for attending Northeast Texas Community College? (please check one)

☐ 1. Get a Job
☐ 2. Improve Skills Needed in Current Job
☐ 3. Get a Better Job
☐ 4. Maintain Licensure
☐ 5. Earn a Certificate
☐ 6. Earn a Two-Year Degree
☐ 7. Earn Credit to Apply to a Four-Year Degree
☐ 8. Personal Enrichment
☐ 9. Other

How long do you plan on being at Northeast Texas Community College? (please check one)

☐ 1. One Semester Only
☐ 2. Two Semesters
☐ 3. One Year
☐ 4. Two Years
☐ 5. Three Years
☐ 6. More Than Three Years

What is your current employment status? (please check one)

☐ 1. Employed Full-time (40 hours or more per week)
☐ 2. Employed Part-time (Less than 40 hours per week)
☐ 3. Employed as a Homemaker
☐ 4. Not Employed, Seeking Work
☐ 5. Not Employed, Not Seeking Work

What is your **previous** college-level academic experience? (please check one)

☐ 1. None
☐ 2. Some Postsecondary Education
☐ 3. Postsecondary Award, Certificate, or Diploma
☐ 4. Associates' Degree
☐ 5. Bachelor's Degree
☐ 6. Master's Degree
☐ 7. Doctoral Degree
☐ 8. First-professional Degree

If you consider yourself to be in any of the following categories, please check one.

☐ 1. Handicapped
☐ 2. Limited English Proficiency
☐ 3. Single Parent/Homemaker
☐ 4. Learning Disability
☐ 5. Culturally Disadvantaged
☐ 6. Academically Disadvantaged
☐ 7. Economically Disadvantaged
☐ 8. Physical Disability
  ☐ Deaf
  ☐ Deaf-Blind
  ☐ Hard of Hearing
  ☐ Orthopedically Impaired
  ☐ Other Health Impaired
  ☐ Speech Impaired
  ☐ Visually Handicapped

How did you receive your schedule of classes? (please check one)

☐ 1. Called NTCC and it was mailed to you.
☐ 2. Came by NTCC and picked it up.
☐ 3. Newspaper insert.
☐ 4. Other____.

Describe the highest level of formal education obtained by your father. (please check one)

☐ 1. Not a high school graduate
☐ 2. High school graduate
☐ 3. Some college or associate's degree
☐ 4. Bachelor's degree or above

Describe the highest level of formal education obtained by your mother (please check one)

☐ 1. Not a high school graduate
☐ 2. High school graduate
☐ 3. Some college or associate's degree
☐ 4. Bachelor's degree or above

TX8-1-F (NRS-DeVAULT) Term:

Tex-SIS FOLLOW-UP

PROJECT FOLLOW-UP

Please make corrections to the information above if necessary

FOR COLLEGE USE ONLY

Term Date Mo ☐ ☐ Yr ☐ ☐
16 17 20 21

Completion Code ☐ 71

Course Type Code
73- 1 ☐ Coop
2 ☐ Non-Coop

Group Code
33- A ☐ O/T
B ☐ LT
C ☐ OTH
D ☐ VC

Target Pop. Code
1 ☐ REG
2 ☐ DAVT
3 ☐ HNCP
4 ☐ LEP
5 ☐ SP/HOME
6 ☐ SB/STER

Major Code
34 35 36 37 38 39

Level Code
76- 2 ☐ Postsecondary
3 ☐ Adult-LT
4 ☐ Adult-ST
5 ☐ OTH

Special Code ☐ 63

-1
-44

Note: This survey is authorized by Public Laws 20 USC [illegible] and 20 USC 2391. While you are not required to respond to this survey your cooperation is needed to insure that the results of this effort are comprehensive, reliable, and timely.

PLEASE CHECK APPROPRIATE BLOCK(S) WITHIN EACH CATEGORY BELOW.

SECTION A

EVERYONE SHOULD ANSWER THIS SECTION

Do not write in this column

Please respond to the below as appropriate. This information is needed for equal opportunity education and employment reporting.

MAJOR ____________________ (At our college)

SEX
654- M ☐ Male
F ☐ Female

ETHNIC GROUP
66- 1 ☐ American Indian or Alaskan Native
2 ☐ Asian or Pacific Islander
3 ☐ Black, not of Hispanic Origin
4 ☐ Hispanic
5 ☐ White, not of Hispanic Origin

AGE
67- B ☐ 16-19
C ☐ 20-24
D ☐ 25-29
E ☐ 30-34
F ☐ 35-44
G ☐ 45-54
H ☐ 55-64
I ☐ 65 and over

1 **What was your PRIMARY objective in attending our two-year college?**

46-1 ☐ Improvement of existing "job skills"
47-1 ☐ Preparation for "job to be obtained"
48-1 ☐ University transfer credit
49-1 ☐ Personal interest
50-1 ☐ Other (describe) ____________________

2 **To what extent has this objective been completed?**

51- 1 ☐ Fully completed
2 ☐ Partially completed
3 ☐ Not completed

3 **Do you plan to pursue this objective further?**

52- 1 ☐ Yes, where? ➡
2 ☐ No

53-1 ☐ At our college
54-1 ☐ At another college
55-1 ☐ Other (describe) ____________________

4 **How much education is (or was) required to accomplish your educational objective at our college?**

56-1 ☐ Selected course(s)
57-1 ☐ Certificate program
58-1 ☐ Two-year associate degree program
59-1 ☐ Other (describe) ____________________

5 **What was your principal reason for NOT re-enrolling at our college this semester?**

60-1 ☐ Completed needed courses
61-1 ☐ Transportation problems
62-1 ☐ Transferred to another college
63-1 ☐ Found job in occupation related to course(s) completed at this college
64-1 ☐ Conflicting job hours
65-1 ☐ Financial reasons
66-1 ☐ Change of residence
67-1 ☐ Grade problems
68-1 ☐ Dissatisfied with instruction
69-1 ☐ Dissatisfied with content of courses
70-1 ☐ Personal family illness or injury
71-1 ☐ Other personal family reasons
72-1 ☐ Other (describe) ____________________

6 **Which statement best describes your feeling about your educational experience at our college?**

Do not write in this column

73- 1 ☐ Very satisfied
2 ☐ Satisfied
3 ☐ Average
4 ☐ Disappointed
5 ☐ Very disappointed

7 **If you have completed courses in your MAJOR FIELD OF STUDY please rate them according to how well they fulfilled your individual needs. Students with "undecided/undeclared" majors should skip to next question.**

		Very Good 1	Good 2	Average 3	Poor 4	Very Poor 5
a. Quality of instruction	74-	☐	☐	☐	☐	☐
b. Grading, Testing	75-	☐	☐	☐	☐	☐
c. Instructor interest	76-	☐	☐	☐	☐	☐
d. Content of course(s)	77-	☐	☐	☐	☐	☐
e. Instructional media	78-	☐	☐	☐	☐	☐
f. Class size	79-	☐	☐	☐	☐	☐

8 **If you have used any of the below college services, please rate them according to how well they fulfilled your individual needs.**

		Very Good 1	Good 2	Average 3	Poor 4	Very Poor 5
a. Financial aids	34-	☐	☐	☐	☐	☐
b. Counseling	35-	☐	☐	☐	☐	☐
c. Job placement services	36-	☐	☐	☐	☐	☐
d. Course advisement	37-	☐	☐	☐	☐	☐
e. Tutoring services	38-	☐	☐	☐	☐	☐
f. Veterans services	39-	☐	☐	☐	☐	☐
g. Learning lab. packages	40-	☐	☐	☐	☐	☐
h. Student activities	41-	☐	☐	☐	☐	☐
i. Library services	42-	☐	☐	☐	☐	☐

9 **Do you currently have a college degree or certificate?**

DMA ☐ ☐ ☐ ☐ ☐ ☐

73- ☐ Yes, what? ➡
☐ No

74- 1 ☐ Certificate
2 ☐ Associate Degree
3 ☐ Bachelor's
4 ☐ Master's
5 ☐ Doctorate
6 ☐ Other ____________________

(Degree or Certificate Field of Study) ____________________

10 **What is your current educational status? (Check one)**

43- 1 ☐ Currently attending school
2 ☐ Not currently attending school

11 **What is your current employment status? (Check one)**

44- 1 ☐ Employed (Includes all employment, even if below your qualifications; does not include full-time military service)
2 ☐ Employed (Full-time military service)
3 ☐ Unemployed (Not employed, but actively seeking employment)
4 ☐ Not in labor force (Not employed and not seeking employment because of choice, illness, full-time student status, retirement, pregnancy, or other such reason)

OVER PLEASE!

BELOW SPACE RESERVED FOR COMMENTS

BEST COPY AVAILABLE

MAJOR CODE ☐ ☐ ☐ ☐ ☐ ☐

SECTION B

IF YOU ARE CURRENTLY EMPLOYED, OR IN FULL-TIME MILITARY SERVICE, PLEASE ANSWER THIS SECTION. OTHERWISE, SKIP TO SECTION C.

Do not write in this column.

1 Please provide the following information on your present job.

Name of Company or Firm (If self-employed, please write self.)

Company or Firm Mailing Address

City State (ST) Zip Code

Your Job Title

Your Job Duties

SIC 45 ☐ 46 ☐ 47 ☐
EJT 48 ☐ 49 ☐ 50 ☐ 51 ☐ 52 ☐ ☐ ☐ ☐ ☐

2 Is this job related to the courses you have completed at our college?

62- 1 ☐ Yes, it is directly or closely related
2 ☐ No, it is only remotely related or is not related at all

3 What is your current salary (gross)? (Do not add in overtime.) This information, when combined with others in your field of study, will provide valuable information to other individuals in their own career planning.

(Check one)

$ ________ • ____ (63) PER (70) 1 ☐ HOUR 2 ☐ WEEK 3 ☐ MONTH 4 ☐ YEAR

SI 63 ☐ 64 ☐ 65 ☐ 66 ☐ 67 ☐ 68 ☐ 69 ☐

4 The salary in the preceding item is based on how many hours per week employment?

Dates of Employment

________ Hours per Week (71-72) From ________ To ________

5 We periodically conduct surveys of employers to help us evaluate the courses we offer and to advise us on other courses and programs which are needed. If we may contact your immediate supervisor so he or she can have the opportunity to participate in such a survey, please supply the below information.

Supervisor's Last Name First Name M.I.

Supervisor's Job Title

Please provide address if different from your company address

HR 71 ☐ 72 ☐
SJT 34 ☐ 35 ☐ 36 ☐ 37 ☐ 38 ☐ ☐ ☐ ☐ ☐ ☐

6 Please check below if the course(s) you took at our college helped you in your occupational area in any of the following ways.

43-1 ☐ Helped to obtain job
44-1 ☐ Helped performance on present job
45-1 ☐ Helped advance on present job
46-1 ☐ None of the above
47-1 ☐ Other (describe) ________

7 How would you rate the training you received at our college in relation to its usefulness to you in performing your job?

48- 1 ☐ Very Good
2 ☐ Good
3 ☐ Average
4 ☐ Poor
5 ☐ Very poor

8 Would you recommend the course(s) taken at our college to others employed in positions similar to yours?

49- 1 ☐ No
2 ☐ Undecided
3 ☐ Yes

9 Were you employed in your occupational area PRIOR to enrolling in the course(s) completed at our college?

50- 1 ☐ No
2 ☐ Yes

SECTION C

IF YOU HAVE ENROLLED IN ANOTHER COLLEGE SINCE YOUR ENROLLMENT AT OUR COLLEGE, PLEASE ANSWER THIS SECTION. OTHERWISE, SKIP TO SECTION D.

Do not write in this column.

1 Please provide the below information on your current (or most recently attended) college.

Name of College

City and State

Your Current Major Field of Study

TC 51 ☐ 52 ☐ 53 ☐ 54 ☐ 55 ☐ 56 ☐

2 Did you have problems transferring to the college indicated above?

65- 1 ☐ Yes, what? →
66-1 ☐ Transferring credit hours
67-1 ☐ Transcript problems
68-1 ☐ Admission problems
69-1 ☐ Other (describe) ________
2 ☐ No

TMC 57 ☐ 58 ☐ 59 ☐ 60 ☐ ☐ ☐ ☐ ☐

3 How many credit hours earned at our college were not accepted at the college indicated above?

70- 1 ☐ All credit hours accepted
2 ☐ Lost 1 - 3 credit hours
3 ☐ Lost 4 - 6 credit hours
4 ☐ Lost 7 - 12 credit hours
5 ☐ Lost 13 - 21 credit hours
6 ☐ Lost more than 21 credit hours

4 In your opinion, how well did our college prepare you for continuing your education?

71- 1 ☐ Very good
2 ☐ Good
3 ☐ Average
4 ☐ Poor
5 ☐ Very Poor

5 If you are currently enrolled in college, please indicate your current status and classification at the college indicated above.

STATUS

72- 1 ☐ Part-time student (Less than 12 hours)
2 ☐ Full-time student (12 or more hours)

CLASSIFICATION

73- 1 ☐ Freshman
2 ☐ Sophomore
3 ☐ Junior
4 ☐ Senior
5 ☐ Graduate student

6 How many credit hours earned at our college were successfully transferred to another institution?

________ Credit hours transferred (74-76)

7 What term and year did you first enroll at your transfer institution?

________ Term ________ Year

TYP 77 ☐ 78 ☐ 79 ☐

SECTION D

ALL STUDENTS SHOULD ANSWER THIS SECTION.

1 Approximately how many credit hours have you completed at our college? Please mark appropriate column.

74- 1 ☐ None
2 ☐ 1 - 10
3 ☐ 11 - 20
4 ☐ 21 - 30
5 ☐ 31 - 40
6 ☐ 41 - 50
7 ☐ 51 - 60
8 ☐ More than 60

2 How do you see the course(s) completed at our college in terms of your career plans:

76-1 ☐ of immediate, direct benefit
77-1 ☐ of long term, direct benefit
78-1 ☐ of indirect benefit
79-1 ☐ of no benefit

3 Are you interested in taking other courses at our college? You may include courses not presently offered by our college.

80- 1 ☐ No
2 ☐ Yes, what course(s)? ________

4 We would appreciate any comments regarding how we could improve the course(s) you have completed and/or services we have provided. Please use the below space (front and back) for your comments.

NRS-DeVAULT

BELOW SPACE RESERVED FOR COMMENTS

3 5

(Use reverse side for additional space)

THANK YOU FOR ASSISTING US IN OUR SURVEY! PLEASE RETURN THIS FORM IN THE PRE-PAID ENVELOPE AS SOON AS POSSIBLE!

TX8-4-E (EMP-DeVault) Term:

Tex-SIS FOLLOW-UP

PROJECT FOLLOW-UP

☐ -1

Please make corrections to the information above if necessary.

Note: This survey is authorized by Public Laws 20 USC 2312 and 20 USC 2391. While you are not required to respond to this survey, your cooperation is needed to insure that the results of this effort are comprehensive, reliable, and timely.

☐ -44

FOR COLLEGE USE ONLY

SEX

65- M ☐ Male
F ☐ Female

ETHNIC GROUP

66-
5 ☐ American Indian or Alaskan Native
4 ☐ Asian or Pacific Islander
2 ☐ Black, not of Hispanic Origin
3 ☐ Hispanic
1 ☐ White, not of Hispanic Origin

AGE

67-
B ☐ 16-19
C ☐ 20-24
D ☐ 25-29
E ☐ 30-34
F ☐ 35-44
G ☐ 45-54
H ☐ 55-64
I ☐ 65 and over

Term Date

Mo ☐ ☐ Yr ☐ ☐
16 17 20 21

Completion Code 73 ☐

Course Type Code

74-
1 ☐ Coop
2 ☐ Non-Coop

Group Code

33-
A ☐ O/T
B ☐ UT
C ☐ OTH
D ☐ VC

Target Pop. Code

1 ☐ REG
2 ☐ DAVT
3 ☐ HNCP
4 ☐ LEP
5 ☐ SP/HOME
6 ☐ SB/STER

Major Code

☐ ☐ ☐ ☐ ☐ ☐
34 35 36 37 38 39

Level Code

76-
2 ☐ Postsecondary
3 ☐ Adult - LT
4 ☐ Adult - ST
5 ☐ OTH

EMP Code ☐ 62

Special Code ☐ 63

IDENTIFICATION ____________________

☐ ☐ ☐ ☐ ☐ EJT
46 47 48 49 50

JOB TITLE ____________________

☐ ☐ ☐ ☐

PROGRAM MAJOR ____________________

☐ ☐ ☐ SIC
55 56 57

____

EMPLOYER (COMPANY NAME - INSTITUTION - ORGANIZATION, ETC.)

1 Is the job title and status of this individual accurate?

58- 1 ☐ Yes
2 ☐ No: IF NO, please describe change(s) below.

____

____

2 What is your relationship with this individual?

59-1 ☐ Employer
60-1 ☐ Supervisor
61-1 ☐ Personnel staff
62-1 ☐ Co-worker
63-1 ☐ Other (describe) ____________________

____

OVER PLEASE!

3

Please rate the training received by this individual in the following personal skill areas. Please respond only to those areas you feel are appropriate.

		Very Good 1	Good 2	Average 3	Poor 4	Very Poor 5
a. Accepting responsibility	64-	☐	☐	☐	☐	☐
b. Punctuality	65-	☐	☐	☐	☐	☐
c. Personal initiative	66-	☐	☐	☐	☐	☐
d. Willingness to learn	67-	☐	☐	☐	☐	☐
e. Co-worker cooperation	68-	☐	☐	☐	☐	☐
f. Management cooperation	69-	☐	☐	☐	☐	☐
g. Work attendance	70-	☐	☐	☐	☐	☐
h. Work attitude	71-	☐	☐	☐	☐	☐
i. Personal appearance	72-	☐	☐	☐	☐	☐
j. Compliance with policies	73-	☐	☐	☐	☐	☐

Do not write in this column.

4

Please rate the training received by this individual in the following technical skill areas. Please respond only to those areas you feel are applicable to the occupational area.

		Very Good 1	Good 2	Average 3	Poor 4	Very Poor 5
a. Mathematical skills	34-	☐	☐	☐	☐	☐
b. Technical knowledge	35-	☐	☐	☐	☐	☐
c. Organizational ability	36-	☐	☐	☐	☐	☐
d. Communication skills	37-	☐	☐	☐	☐	☐
e. Problem solving skills	38-	☐	☐	☐	☐	☐
f. Work quality	39-	☐	☐	☐	☐	☐
g. Work quantity	40-	☐	☐	☐	☐	☐
h. Manual dexterity	41-	☐	☐	☐	☐	☐
i. Meeting the public	42-	☐	☐	☐	☐	☐
j. Following instructions	43-	☐	☐	☐	☐	☐
k. Operation of equipment	44-	☐	☐	☐	☐	☐

5

What is your overall rating of the training received by this individual as it relates to the requirements of his or her job?

45— 1 ☐ Very good
2 ☐ Good
3 ☐ Average
4 ☐ Poor
5 ☐ Very poor

6

What, in your opinion, is the job outlook for program employees of this particular occupational field?

Present		Future
46— 1 ☐	Very good	47— 1 ☐
2 ☐	Good	2 ☐
3 ☐	Average	3 ☐
4 ☐	Poor	4 ☐
5 ☐	Very poor	5 ☐

Do not write in this column.

7

As a result of this person's training, how would you rate his or her preparation in relation to other employees in his or her working group who did not receive such training?

48— 1 ☐ No basis for comparison
2 ☐ Individual is better prepared
3 ☐ Both are about the same
4 ☐ Individual is less prepared

8

To what extent, if any, has this individual's training added to his or her ability for job placement and advancement?

49— 1 ☐ Very much
2 ☐ Much
3 ☐ Average
4 ☐ Very little
5 ☐ None

9

What was the primary source(s) for the initial hiring of this individual?

50-1 ☐ Employment agency
51-1 ☐ College faculty member
52-1 ☐ College job placement office
53-1 ☐ Mutual acquaintance
54-1 ☐ Applicant applied on own initiative
55-1 ☐ Other (describe) ________________________

____

____

A

What suggestions do you have for improving the technical and/or personal skills of future employees?

B

What, in your opinion, are additional areas of training (job titles, skills, etc.) in which our school should become involved?

EMP-DeVAULT

THANK YOU FOR ASSISTING US IN OUR SURVEY! PLEASE RETURN THIS FORM IN THE PRE-PAID ENVELOPE AS SOON AS POSSIBLE!

XIII. CAREER LADDER INFORMATION

The following is a career ladder for a student who is interested in pursuing a career in the area of garden center management. The 2+2 program provides for exit points at different levels with the job benefits and type of skills performed appropriate with the level of education attained. These jobs are only entry level jobs with promotion and benefit increases possible.

EXIT LEVEL	JOB TITLE
Postsecondary (Grade 16) **Baccalaureate Degree**	Garden Center Manager Sales Manager/Technician Supervisor
Postsecondary (Grade 14)	Garden Center Assistant Manager Plant Propagator
Secondary (Grade 12)	Garden Center Worker Plant Maintenance Technician

The careers in the horticultural industry are not limited to those listed on the previous page.

The following is only a partial list of career opportunities in the horticultural/plant science areas.

Composter or Plant Recycler

Landscape Material Installation Supervisor

Landscape Gardener

Nursery Employee

Horticultural Maintenance Supervisor

Greenhouse Employee

Installation Supervisor/Installation Manager

Operations Manager/General Manager

Sales/Design Representative

Sales Manager/Director of Marketing and Design

Quality Control Technician

Technician Supervisor/Maintanance Manager

Plant Breeder

Plant Geneticist

XIV. RECOMMENDED TEACHER APPROVAL CRITERIA

The following is the recommended teacher approval criteria for a secondary agriscience teacher training students for the 2+2 Garden Center Management Program.

TEACHER APPROVAL CRITERIA

Secondary teachers who plan to initiate a 2+2 Agricultural Program in the area of Retail Florist Management or Garden Center Management should have the following qualifications:

1. The teacher should have a valid Texas Teacher Certificate with Agricultural Science and Technology certification.
2. The teacher should have the Horticultural Certification for Texas horticulture teachers.
3. The teacher should have attended floral design and other horticultural workshops as approved by the Texas Education Agency.
4. It is not necessary but is recommended that the teacher have taught within the last three years at the time of implementation of the 2+2 program or be a recent graduate (within the past 12 months) of an approved agricultural education program from a Texas college or university.

XV. ARTICULATION AGREEMENT

The following is an example articulation agreement to be signed by the secondary and postsecondary institutions who are interested in providing the agriculture 2+2 curriculum for their students.

AGRICULTURAL OCCUPATIONS 2+2 PROGRAM

ARTICULATION AGREEMENT

PURPOSE

1. To eliminate duplication of effort between area secondary and postsecondary educational institutions in the delivery of agriscience courses.

2. To optimize student enrichment by providing coordinated curriculum to insure a continuous learning path, beginning at the secondary level and continuing to the postsecondary level.

3. To assure that students are adequately equipped with the necessary academic and vocational skills to gain and hold employment upon graduation from both secondary and postsecondary levels.

AGREEMENT

1. Secondary institutions which are a party to this agreement hereby agree to:

    a. Evaluate and recruit students who have, in their opinion, necessary qualifications to successfully complete the Agricultural Occupations 2+2 Articulated Program.

    b. Offer and maintain for the duration of this agreement the agriscience courses designated as a part of the Agriculture 2+2 Articulated Program or a series of courses containing the same competencies.

    c. Maintain necessary records to track and evaluate individual student's progress of required agriscience competencies as contained in the Agricultural Occupations 2+2 Articulated Program. Such records will be forwarded to the postsecondary institution upon request.

2. The postsecondary institutions which are a part of this agreement hereby agree to:

    a. Assist secondary institutions which are a party to this agreement in evaluating and recruiting students.

    b. Offer and maintain for the duration of this agreement Applied and Associate Degree curriculum and resources as specified in the Agricultural Occupations 2+2 Articulated Program. No student will be allowed to enter the associate degree program without having first successfully completed the competencies required in the secondary portion of the Agricultural Occupations 2+2 Articulated Program.

AGRICULTURAL OCCUPATIONS 2+2 PROGRAM

ARTICULATION AGREEMENT
Continued

c. Provide an adequately trained faculty to administer and teach the Agricultural Occupations Applied and Associate Degree curriculum.

d. Provide assessment of students upon entry to the postsecondary institution(students must score 80% or greater on materials covered in secondary program) and counsel students regarding the Applied vs the Associate Degree Programs.

e. Continue student records provided by secondary institutions; maintain adequate records during applied or associate degree program; and track student progress through at least one year of employment and provide to employers upon request.

REVIEW AND CHANGE PROCESS

At the end of one year from the date of this agreement, a review of the Articulation Agreement of the Agricultural Occupations 2+2 Articulated Program will be conducted. All superintendents, principals, counselors, vocational administrators, instructors from secondary schools, administrators and instructors from postsecondary schools, and industry representatives will be invited to provide input for review and revision.

PROVISION FOR IMPLEMENTATION/TERMINATION

This agreement will become effective upon approval by the President of ____________________________________ College and the Superintendent of ____ Independent School District. Upon implementation, this agreement will continue on an annual basis until one of the parties petitions the other party to end the agreement.

Such petition to end the agreement (1) must be submitted one year in advance of the intent to terminate; (2) must be submitted in writing signed by the college president or school superintendent making the petition; and (3) must be delivered to the second party of the agreement. Delivery of the intent to terminate will constitute formal notification and will serve as grounds for termination one year following the date of delivery.

________________________________ President _________________________ College	______________________________ Superintendent __________________________ISD
____________________________1990	__________________________1990